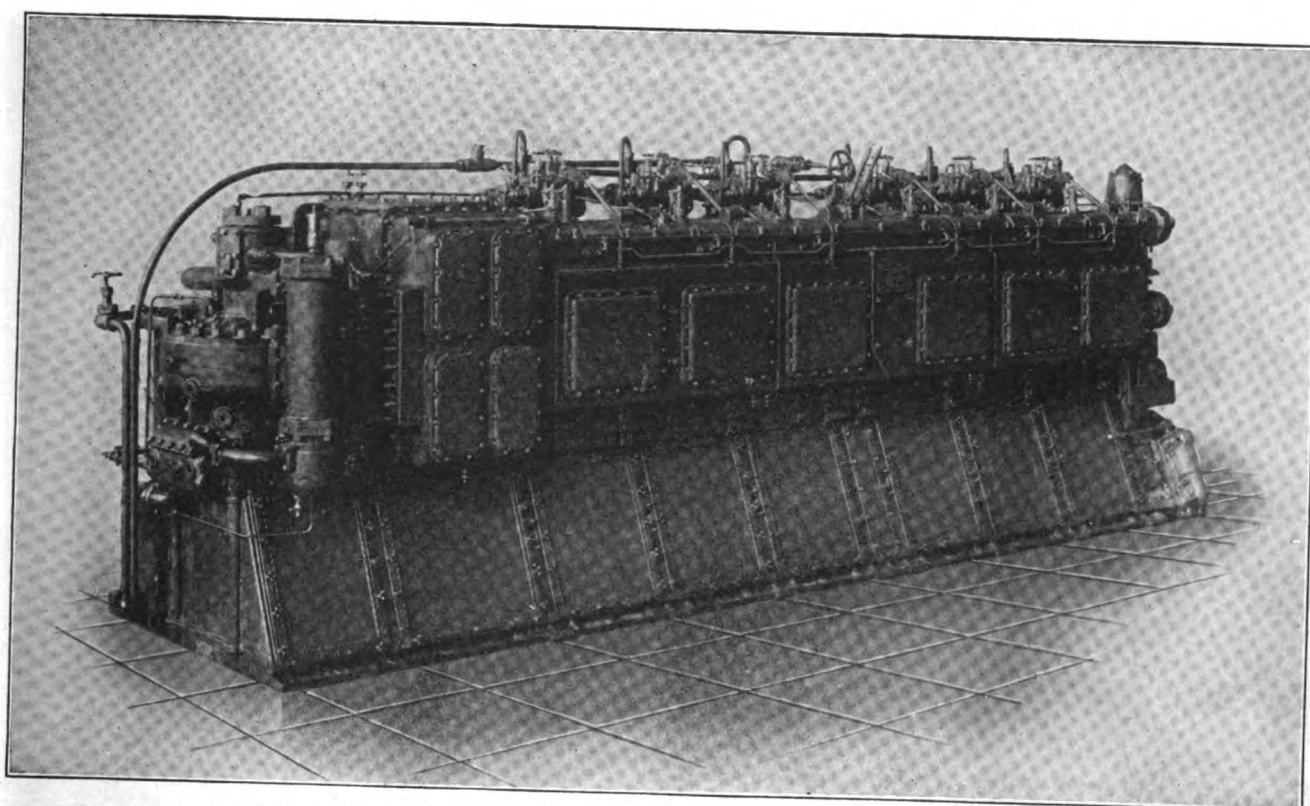


BUSCH-SULZER-DIESEL

STATIONARY AND MARINE DIESEL OIL ENGINES



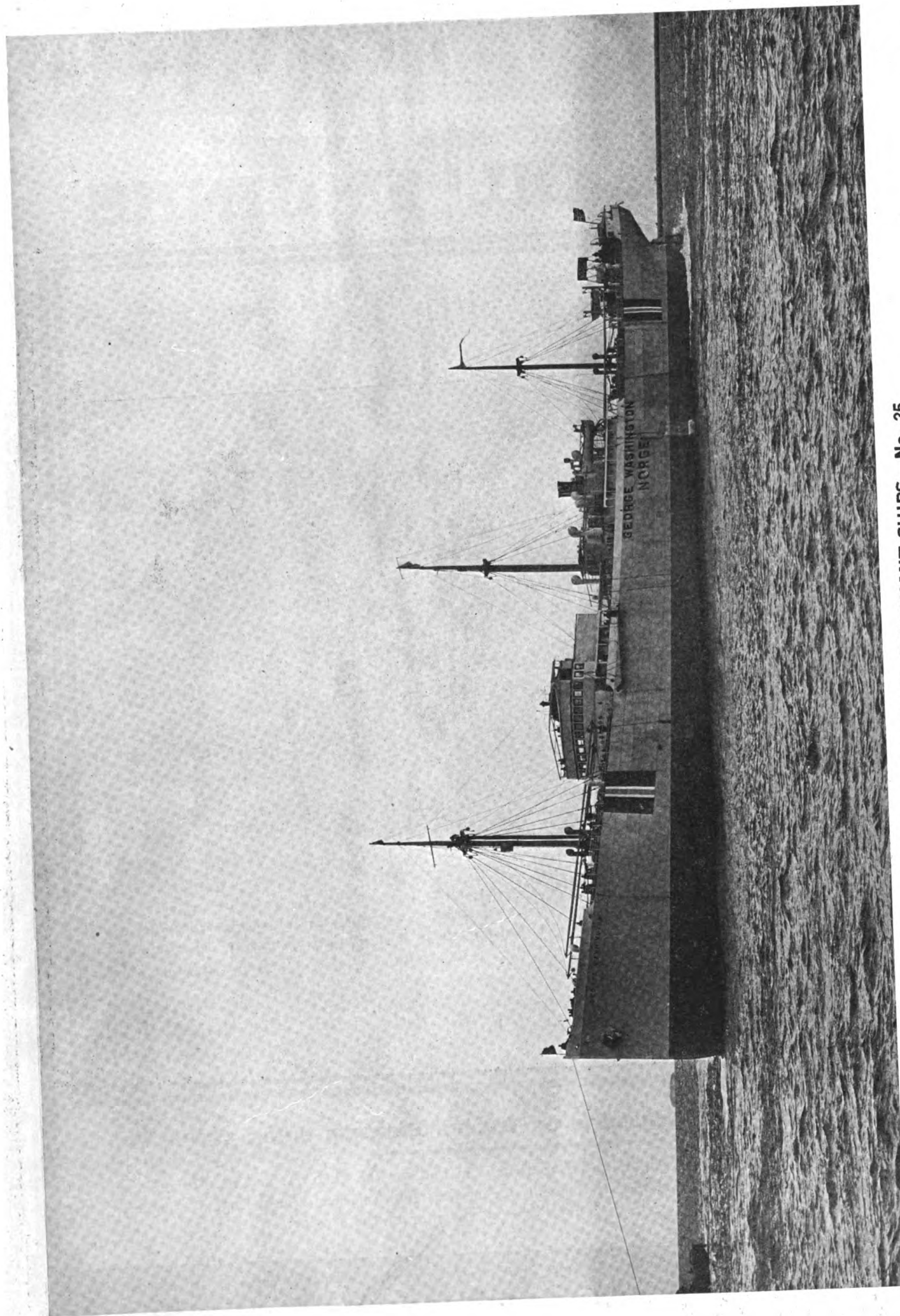
The above picture shows one of our Special, High-Speed Light-weight, Two-cycle, Marine Diesel Engines, having a capacity of 1000 B.H.P., at 360 R.P.M., and weighing 50 pounds per B.H.P.
We build, also, Slow-speed Marine Diesel Engines, from 500 to 3000 B.H.P., and Stationary Diesel Engines, from 120 to 2000 B.H.P.
Subject to prior sale, we can offer prompt shipment of Stationary Diesel Engines of 120, 165, 250, 365 and 520 B.H.P., suitable for transmission or direct connection.

DESIGNERS AND BUILDERS OF DIESEL ENGINES SINCE 1898.

• Owners of all Diesel Engine Rights and Experiences in and for the U. S. A. and its Possessions; Panama and Canada; of the Diesel Motor Company of America; the American Diesel Engine Company; Sulzer Freres of Winterthur, Switzerland; Rudolf Diesel, Inventor of the Engine.

BUSCH-SULZER BROS.-DIESEL ENGINE CO.

ST. LOUIS, U. S. A.



MODERN ECONOMICAL MERCHANT SHIPS—No. 35

The motorship "George Washington," owned by Fred Olsen, Christiania, Norway, and built in 1916 by Burmeister & Wain, Copenhagen, Denmark. Deadweight capacity 9,400 tons; net-cargo capacity 8,400 tons with 1,000 tons of bunker-oil aboard on a draught of 26 ft. 4½ in. forward and 26 ft. 6 in. aft. On one of her voyages under charter to the U. S. Shipping Board she covered 14,612 nautical miles in 55 sailing days at an average speed of 10.8 knots on 597 tons (4,179 barrels) of fuel-oil. Of this fuel the two 1,550 I.H.P. main Diesel engines consumed 567 tons, or 10¼ tons per day. Lubricating oil consumption equalled 0.0013 lb. per I.H.P. hour. Length B. P. 425 ft. 5½ in., breadth 55 ft.; Loaded draught 26½ ft. Complete details of her operation were given in "Motorship" for February, March and May, 1918.

THE DE LAVAL OIL PURIFIER

The De Laval Method of Oil Purification is a remarkable means of removing impurities from lubricating oils, restoring them to their original lubricating qualities.

The Oil Purifier is used on all kinds of ships, from U. S. destroyers to motor driven freighters. It is being put on old ships and ships now building; it keeps the lubrication system free from impurities. It purifies all kinds of oil equally well and removes all kinds of impurities, such as dirt, water, carbon, core-sand, pipe-scale, metallic particles, etc.

The De Laval Oil Purifier is not affected by the motion of the ship. It is furnished in three sizes, each size in either electric, belt or direct steam turbine drive.

Write to nearest sales headquarters for Crank-Case Oil Bulletin No. 102, and also for Marine Bulletin No. 103.

THE DE LAVAL SEPARATOR CO.

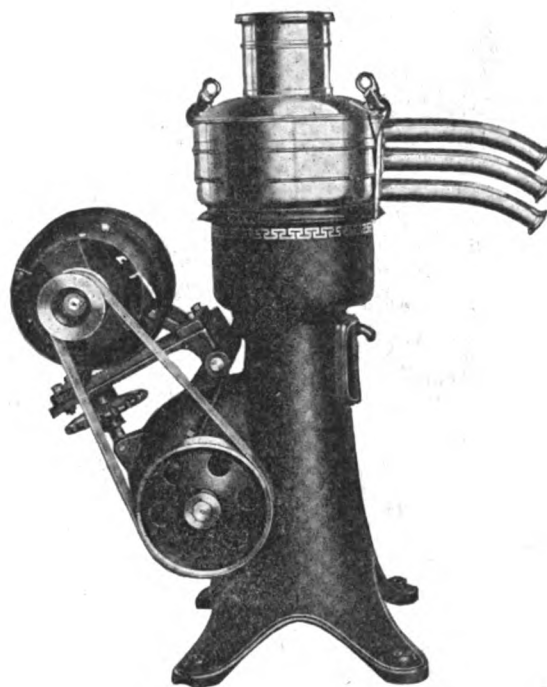
Largest Manufacturers of Centrifugal Machinery in the World

165 Broadway, New York

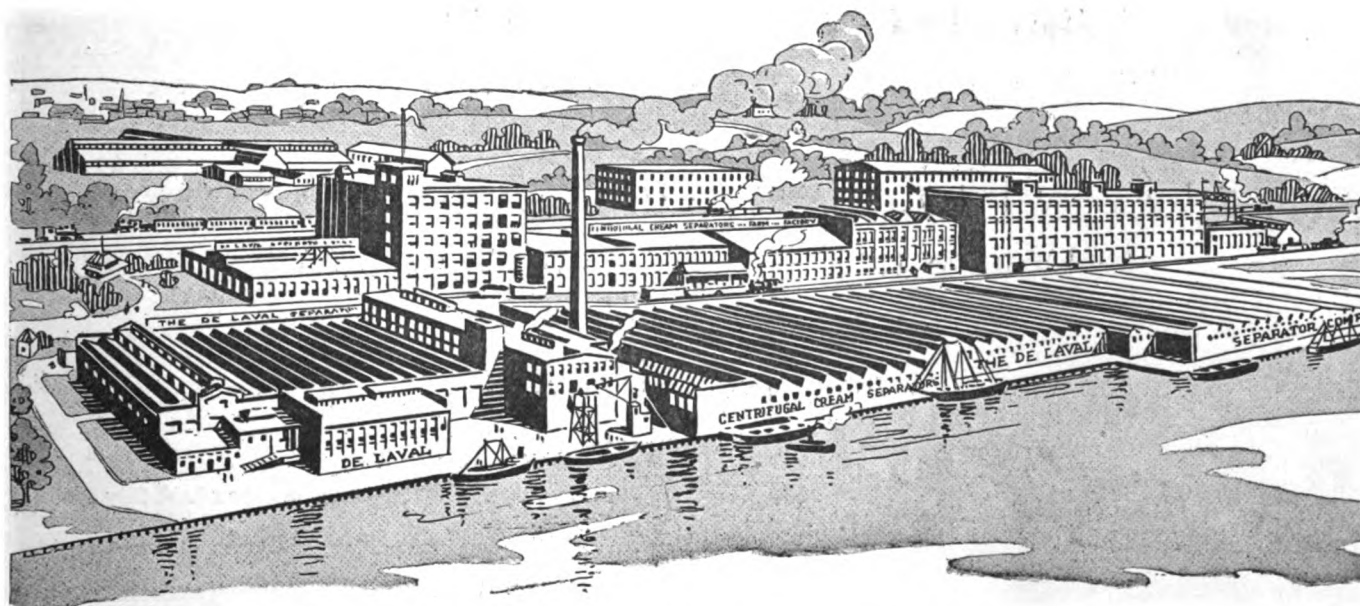
29 East Madison St., Chicago

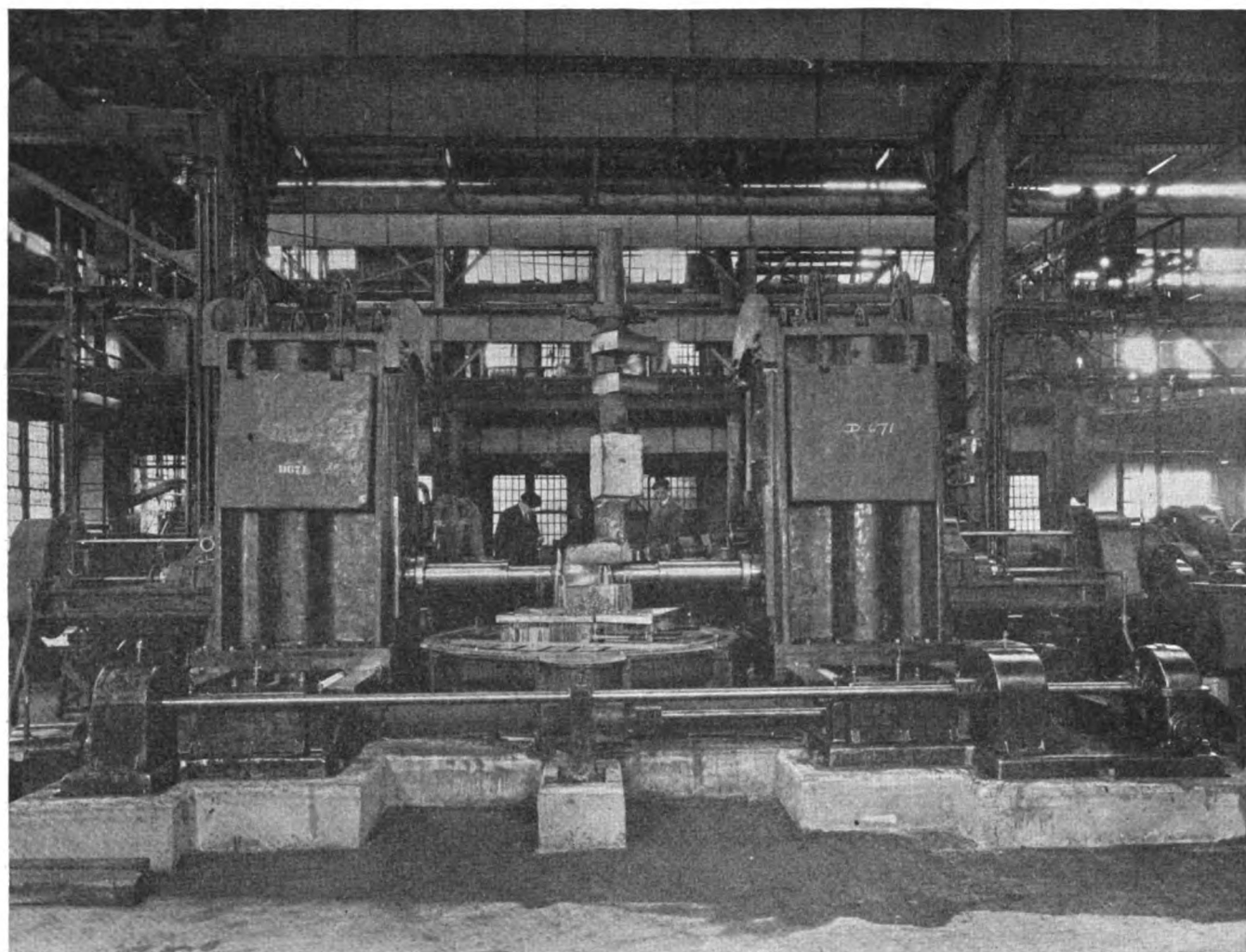
Manufacturers' Selling Agents

De Laval Dairy Supply Co.
San Francisco, Cal.



DE LAVAL OIL PURIFIER
Electric Driven





MIDVALE CRANK-SHAFTS

In Sizes 7" and larger are now being made on our new

BURMEISTER & WAIN MACHINES

This Method of Manufacture Has Many Advantages.

MIDVALE STEEL AND ORDNANCE COMPANY CAMBRIA STEEL COMPANY

General Sales Office

WIDENER BUILDING, PHILADELPHIA, PA.

DISTRICT SALES OFFICES

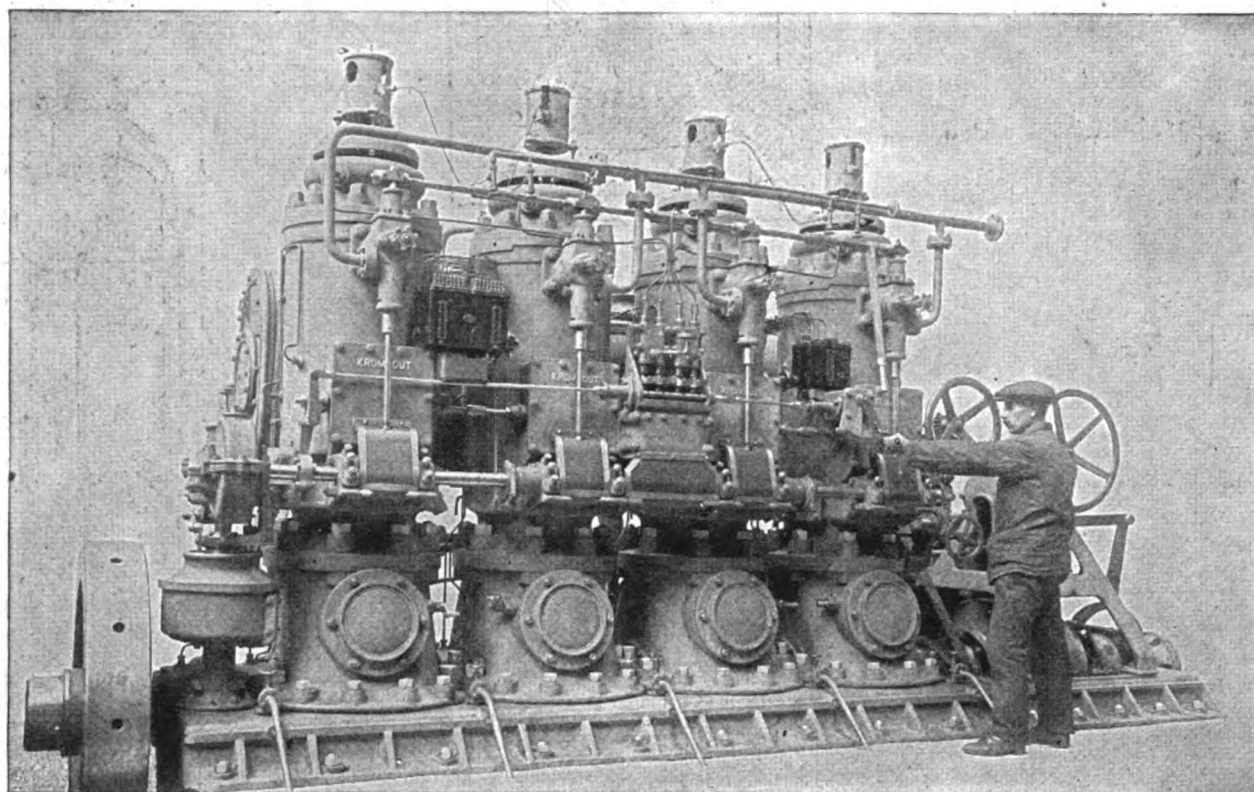
Atlanta Boston Chicago Cincinnati Cleveland Detroit New York Philadelphia Pittsburgh San Francisco Salt Lake City Seattle St. Louis

— CONSOLIDATED STEEL CORPORATION, 165 Broadway, New York, is the sole exporter of our commercial products. Address all export inquiries to them



FOR FIFTEEN YEARS THE KROMHOUT

HAS BEEN THE LEADING MARINE OIL-ENGINE
OF EUROPE



A 320 Shaft Horse-Power KROMHOUT Direct-Reversible Marine Heavy-Oil Engine

WE NOW ARE PREPARED TO DELIVER MARINE AND STATIONARY
KROMHOUT ENGINES IN THE UNITED STATES OF AMERICA
FROM 8 B. H. P. TO 320 B. H. P.

PROSPECTIVE AGENTS ARE DESIRED TO COMMUNICATE WITH US
WITHOUT DELAY

D. GOEDKOOP, JR.

KROMHOUT MOTOR WORKS

AMSTERDAM, HOLLAND





Efficient Oils for Efficient Ships



THE tendency toward the motorship is based solely on efficiency. The motorship has proven itself speedier, more economical and yielding greater cargo space than the older steamship.

But the motorship requires efficient operation to yield its maximum efficiency. One of the most important elements involved is correct lubrication.

In this connection it is significant that a great many of the motorships in operation today are lubricated with Gargoyle D. T. E. oils. We rarely hear of another oil being substituted for Gargoyle D. T. E. when once tried for the cylinder lubrication of a motorship.



The reason is quite simple.

Gargoyle D. T. E. retain their body at high temperatures. They do not emulsify readily. When emulsification does take place, Gargoyle D. T. E. oils easily separate. Corrosion, so injurious to engines, has little chance to get in its deadly work.

It will be worth the while of those few Captains and Chief Engineers who have not as yet used Gargoyle D. T. E. oils to give them a thorough trial. Once used, no other oils are ever likely to be carried.

Send for booklet on Gargoyle D. T. E. Oils.

Marine Oils

A grade for each type of service

VACUUM OIL COMPANY

Specialists in the manufacture of high-grade lubricants for every class of machinery. Obtainable everywhere in the World.

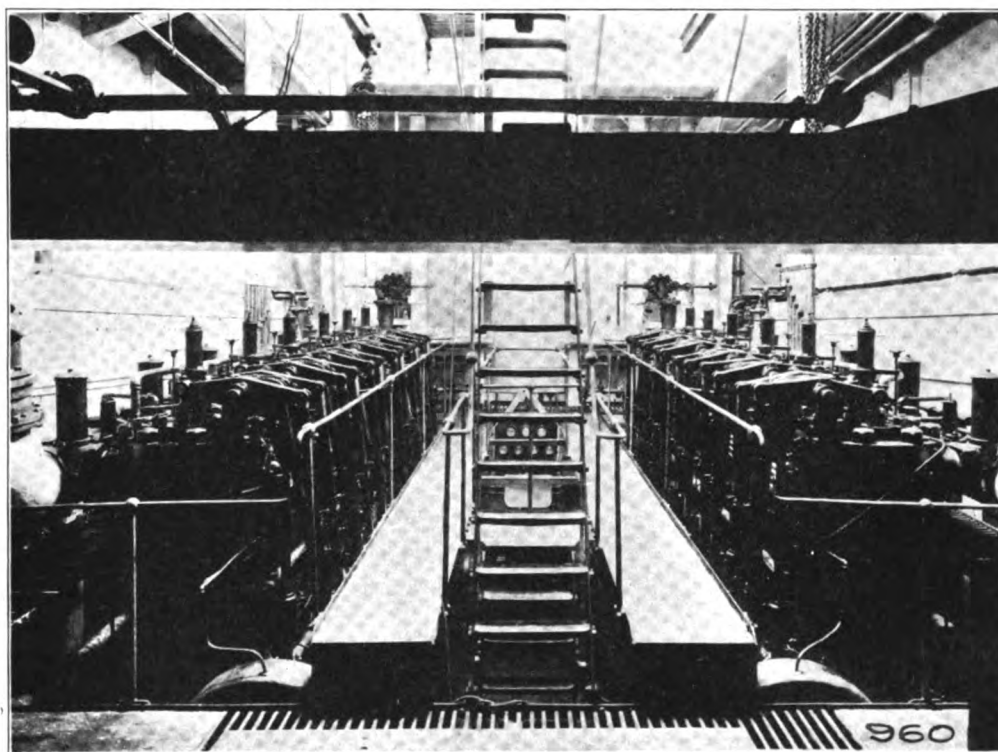
NEW YORK, U.S.A.

Domestic Branches: New York Philadelphia Boston Pittsburgh Chicago Detroit Minneapolis Indianapolis Kansas City, Kan. Des Moines

McINTOSH & SEYMOUR

HEAVY OIL ENGINES

**SIZES MARINE
ENGINES
AVAILABLE**
 390 I. H. P.
 640 I. H. P.
 960 I. H. P.
 1300 I. H. P.
 1550 I. H. P.
 2000 I. H. P.
**ALL FOUR
CYCLE SIX
CYLINDER
AND
DIRECTLY
REVERSIBLE**



ENGINE ROOM OF MOTORSHIP "BENOWA"

**TWENTY
YEARS DIESEL
ENGINE
EXPERIENCE
BOTH STA-
TIONARY AND
MARINE OF
OUR SWEDISH
WORKS AND
THIRTY-
THREE YEARS
EXPERIENCE
ON STEAM
AND DIESEL
ENGINES IN
OUR WORKS,
WITH OUR
WELL
TRAINED OR-
GANIZATION
AND
COMPLETELY
EQUIPPED
WORKS IN-
SURE THE
BEST DIESEL
TYPE ENGINE
AVAILABLE
TO-DAY**

**A MODERN MOTORSHIP REQUIRES A SMALLER CREW THAN A STEAM
SHIP, AND USES VERY MUCH LESS FUEL WHICH GIVES LOWER
OPERATING COST AND MORE CARGO CAPACITY. WE HAVE THE MOST
COMPLETE PLANT DEVOTED EXCLUSIVELY TO THE PRODUCTION
OF DIESEL TYPE ENGINES.**

VESSEL OWNERS AND BUILDERS ARE CORDIALLY INVITED TO INSPECT OUR FACILITIES

McINTOSH & SEYMOUR CORPORATION

149 BROADWAY
NEW YORK CITY

MAIN OFFICE AND WORKS
AUBURN N.Y.

815 SHELDON BLDG.
SAN FRANCISCO CAL

CRAMP

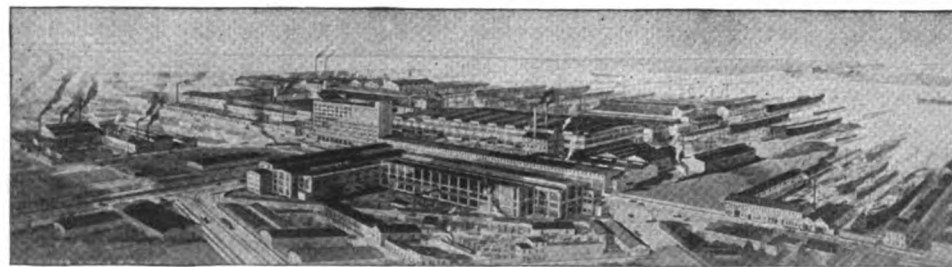
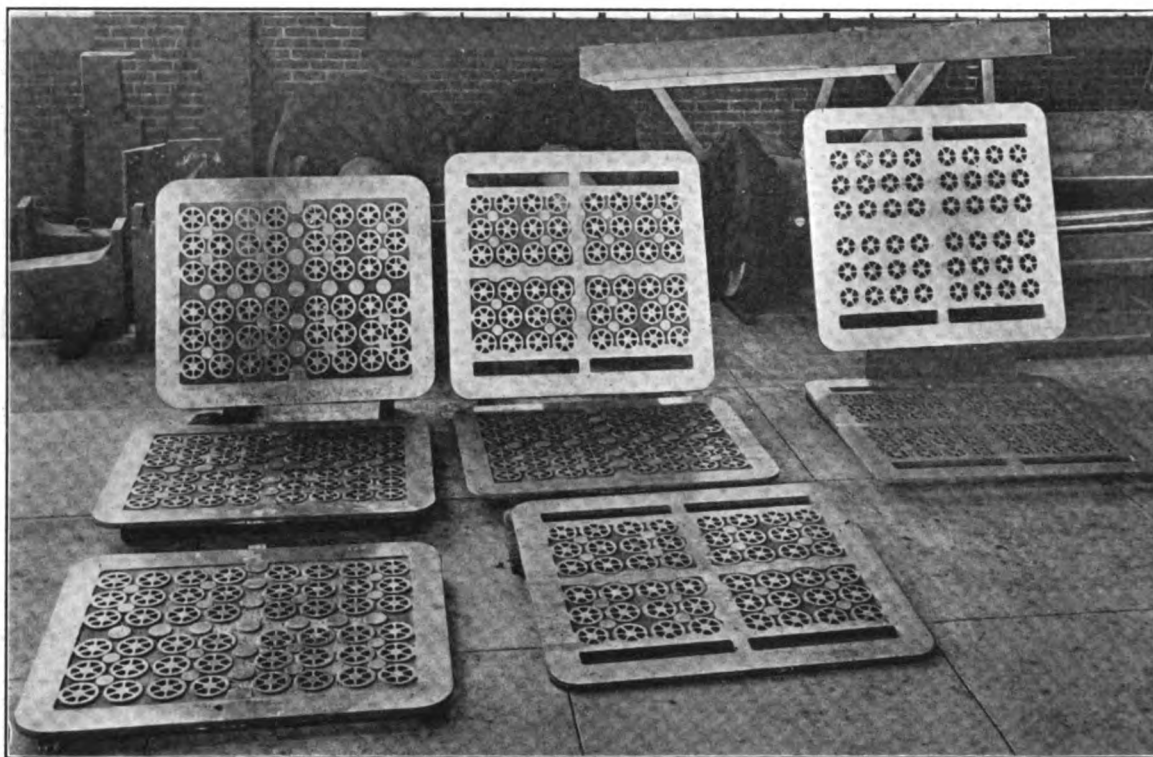
Valve Seat Castings for Dean Brothers Cargo Oil Pumps

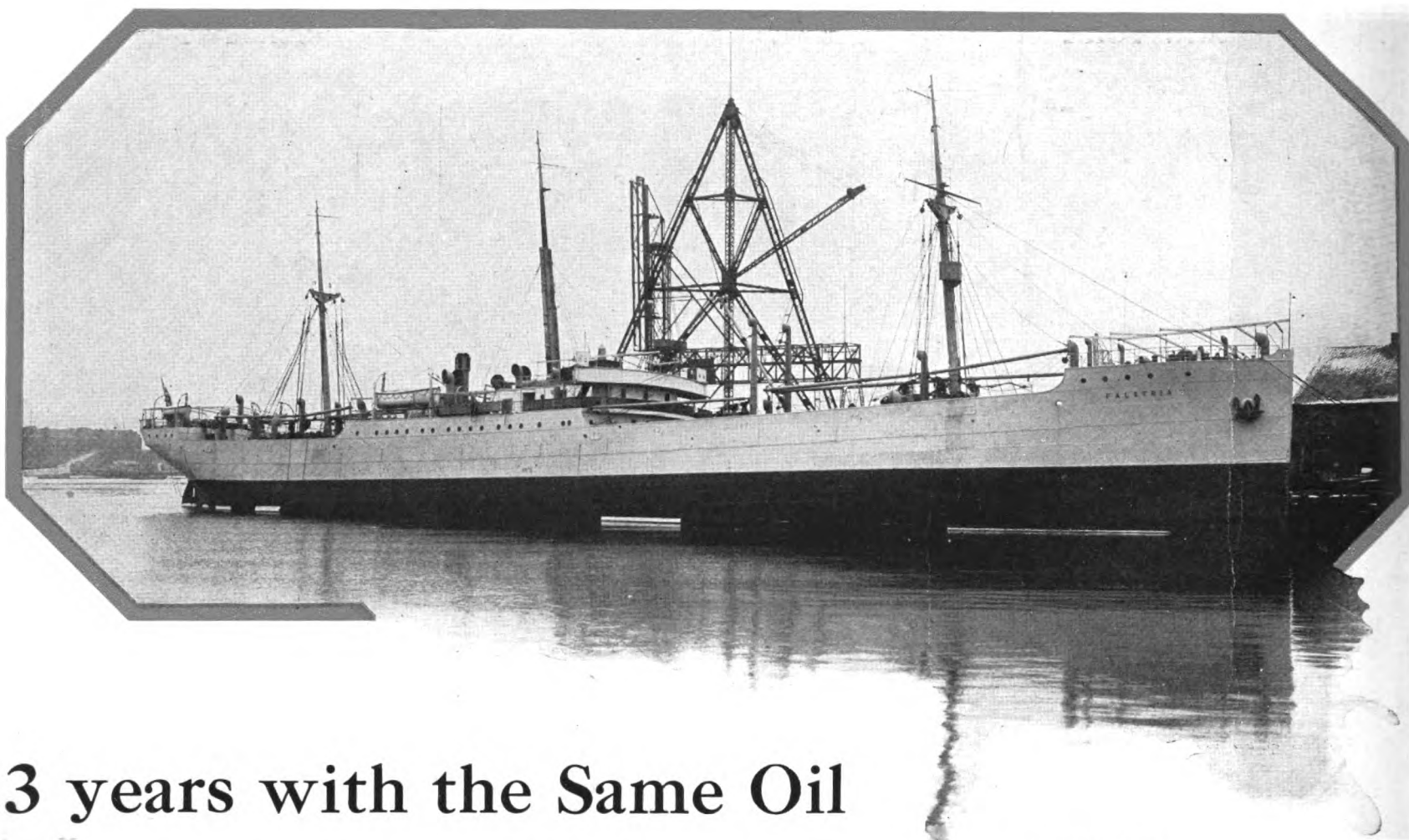
THE photograph below shows a number of valve seat castings for suction and discharge for large Cargo Oil Pumps. These castings are another example of the character of work turned out by the Cramp Ship Building Co.

We can furnish and will be glad to estimate on all kinds of Brass and Bronze Castings for marine use, completed and ready for installation; or on the Ingots and rough castings as desired.

Parsons' Manganese Bronze, all Government Compositions, Bearing Bronze, Hydraulic Bronze.

THE WILLIAM CRAMP & SONS SHIP & ENGINE BUILDING CO., Phila.





3 years with the Same Oil

***What a well-known motorship
accomplished with Gargoyle Marine Oils***

M. S. FALSTRIA
of the East Asiatic Company

NEARLY four years ago the Falstria of the East Asiatic Company was stocked with Gargoyle D. T. E. Oil Heavy. Recently during an inspection of the engine an engineer placed his hand in the crank case and found it clean to the touch. Yet for over three and a half years this engine had been using its original stock of Gargoyle D. T. E. Oil Heavy, only a small part of which had been replaced.

It is performance such as this that makes Gargoyle Marine Oils the choice of motorship owners everywhere. Users of these oils know that the moving parts of their engines are receiving the best protection the market affords.

It has been found that with the use of Gargoyle D. T. E. Oils many of the lubrication ills of Marine Diesel Type engines that had seemed unavoidable have been almost wholly eliminated.

Gargoyle D. T. E. Oils will retain their lubricating qualities under severe service conditions. By their use abrasion and corrosion are very largely eliminated. They are both economically and scientifically correct for the lubrication of all Diesel type engines.

Send for booklet on
Gargoyle D. T. E. Oils



Marine Oils

A grade for each type of service

VACUUM OIL COMPANY

Specialists in the manufacture of high-grade
lubricants for every class of machinery.
Obtainable everywhere in the World.

NEW YORK, U.S.A.

CRAMP

High Grade Tin Babbitts



ON EACH INGOT

Parsons' White Brass No. 2, the best known babbitt for slow speed marine engines.

Elastic limit under compression, 5000 lbs. per sq. in.
 Brinell Hardness..... 34
 Coefficient of friction..... .00748
 Load..... 500 lbs. per sq. in.
 Speed on journal surfaces, 400 ft. per min.

THE Cramp Company for many years has been the leading manufacturer of high grade marine babbitts. This has been due to the policy of the Company of equipping all Cramp built ships with the best in every line that can be bought or manufactured. We keep large quantities of the best high grade tin base babbitts in stock and are prepared to make immediate shipments. Among our leading products are the following:

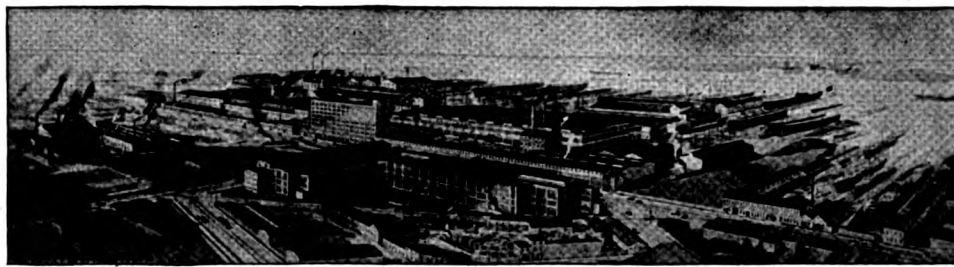
Parsons' White Brass SA, the highest grade babbitt for high speed heavily loaded engines.

Elastic limit under compression, 6000 lbs. per sq. in.
 Brinell Hardness..... 46
 Coefficient of friction..... .00801
 Load..... 750 lbs. per sq. in.
 Speed on journal surfaces, 600 ft. per min.

Cramp's Government Babbitt. For this we use Composition "W". This is the only genuine babbitt, many others marked "Genuine" being imitations and not containing the essential components of Composition "W".

Elastic limit under compression..... 4500 lbs. per sq. in.
 Brinell Hardness 28
 Coefficient of friction..... .00894
 Load 300 lbs. per sq. in.
 Speed on journal surfaces..... 400 ft. per min.

THE WILLIAM CRAMP & SONS SHIP & ENGINE BUILDING CO.
 Philadelphia



Lubrication Experts

wherever you may need them

Your motorship slips into port.

The chances are a Vacuum Oil Company lubrication expert meets her at the quay. This man can recommend the grade of Gargoyle D. T. E. Oil best suited for her Diesel Engines. He can supply the grade of Gargoyle D. T. E. Oil he recommends.

There are over 250 ports

where you can obtain our recommendations for the correct lubrication of any marine engine.

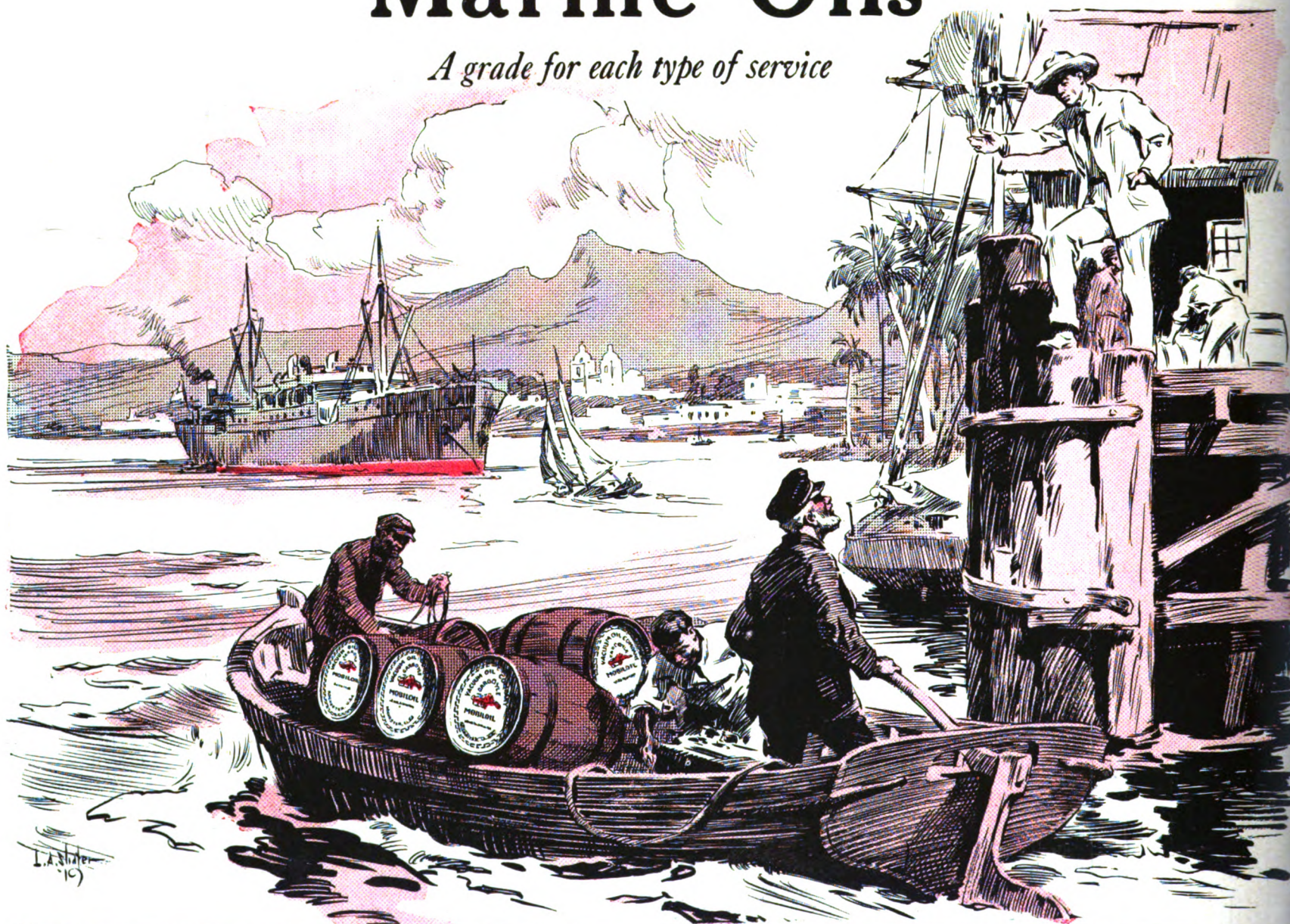
The convenience of this lubrication service to "Skippers" and "Chiefs" is obvious. If desired, oils can be contracted for at the home port and taken on at any port.

Send for booklet on
Gargoyle D. T. E. Oils.



Marine Oils

A grade for each type of service



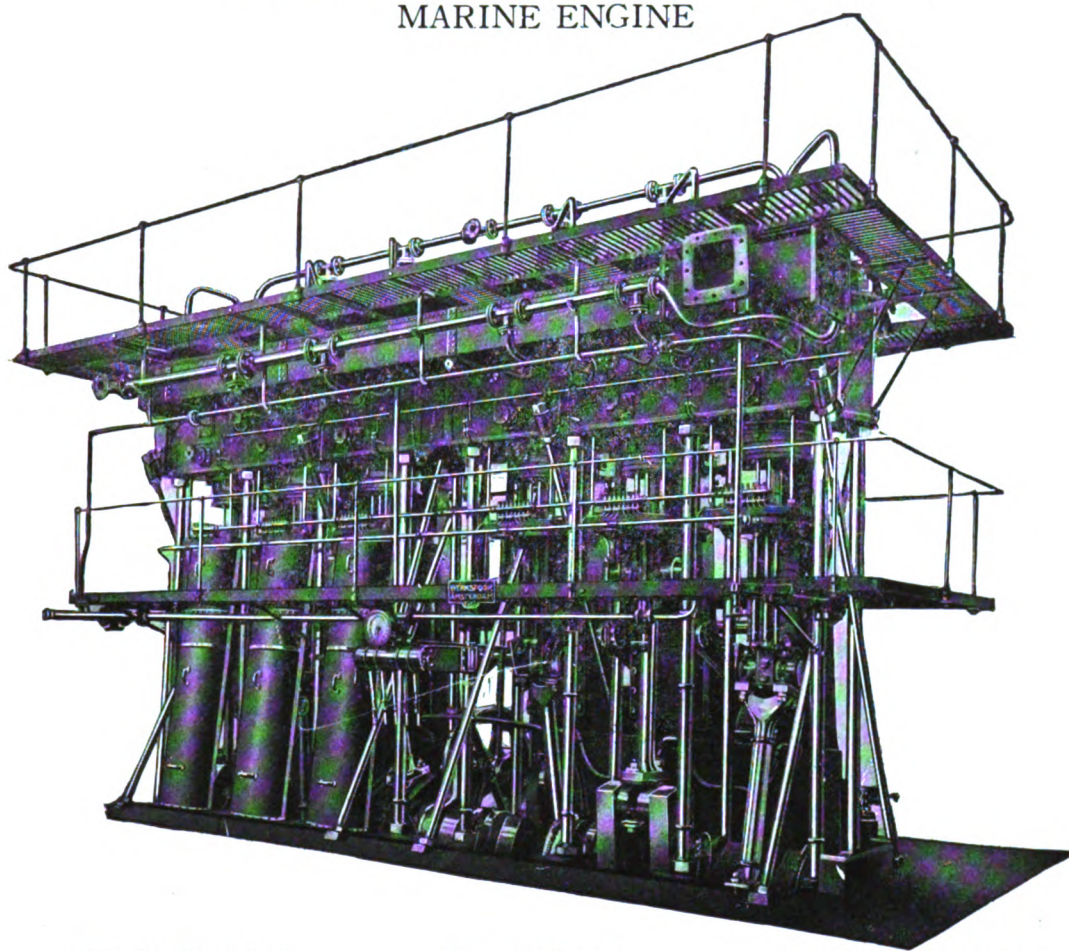
VACUUM OIL COMPANY

Specialists in the manufacture of high-grade lubricants for every class of machinery. Obtainable everywhere in the world.

NEW YORK, U.S.A.

SKANDIA PACIFIC OIL ENGINE COMPANY

BUILDERS UNDER LICENSE OF THE
WERKSPoor-DIESEL
MARINE ENGINE



RELIABILITY

Northwestern Agents
**SKANDIA
ENGINEERING CO.**
101 Grand Trunk Dock
Seattle, Washington

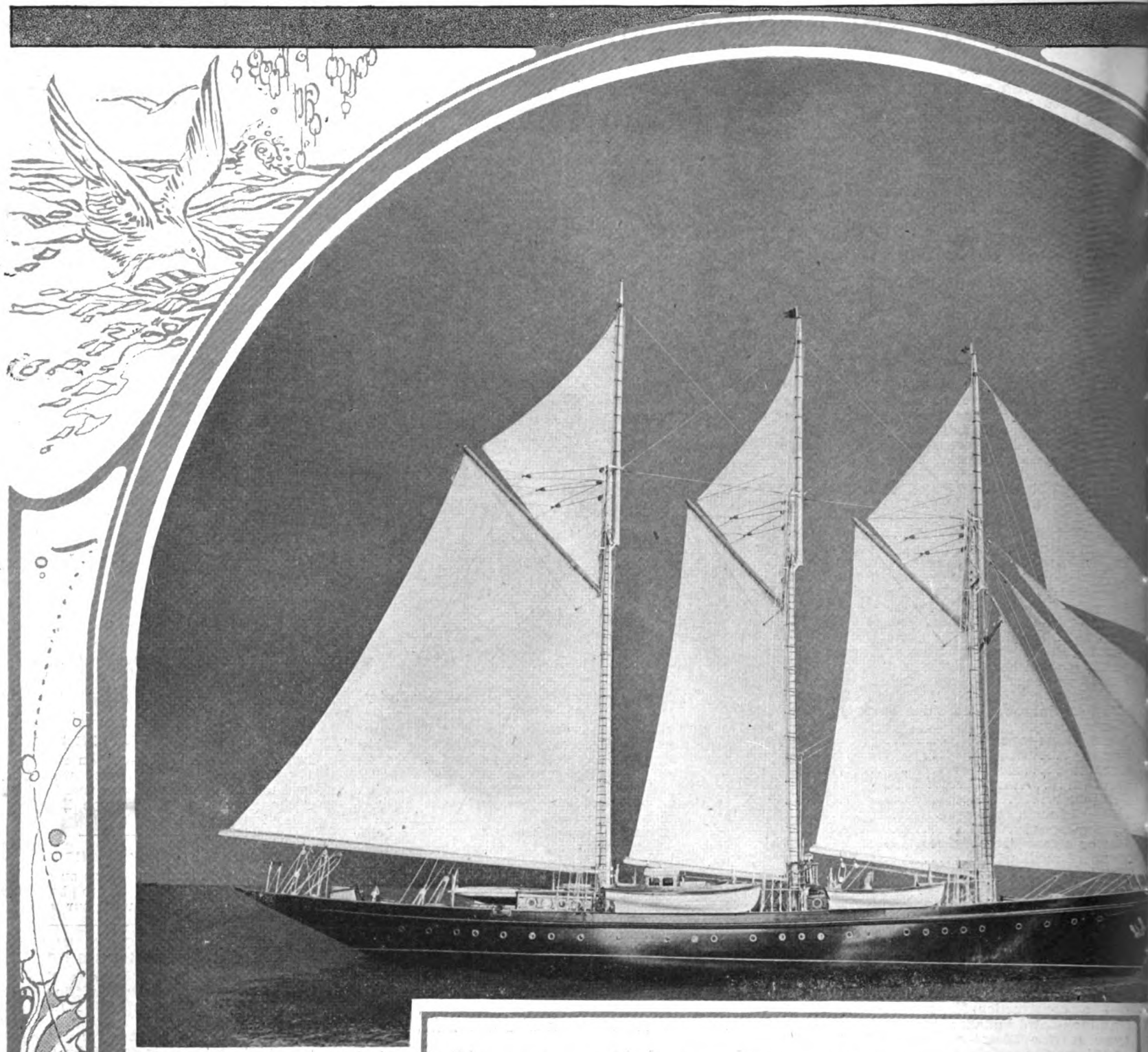
ECONOMY

SKANDIA PACIFIC OIL ENGINE CO.
Balboa Building, San Francisco, Cal.
Works: Oakland, Cal.

ACCESSIBILITY

Eastern Agents
H. S. JOHANNSEN
50 Church Street
New York, N. Y.

WERKSPoor MARINE DIESEL ENGINES



Another Winton Diesel-Electric Drive

ANOTHER boat has adopted the Winton Diesel-Electric Drive type of power installation; another practical example is thus offered of the efficiency, economy and dependability of this, the most modern type of Ship Propulsion.

Mr. Edgar Palmer's new "Guinivere" is equipt with a 550 H.P. Electric Driving Motor installed in the stern, which in turn derives its power from a pair of six cylinder 13" x 18" Winton Diesel Oil Engines direct connected to 225 K.W. Westinghouse Generators.

Investigate fully this highly efficient system of Ship Propulsion—write or wire for full details. Our Engineering Department is completely at your disposal.

WINTON ENGINE WORKS

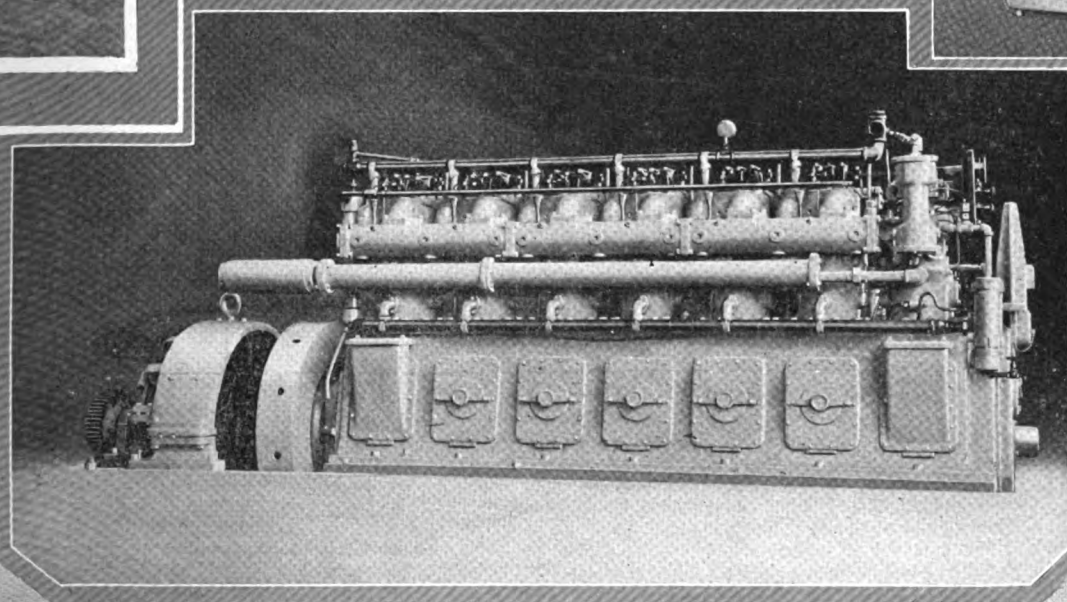
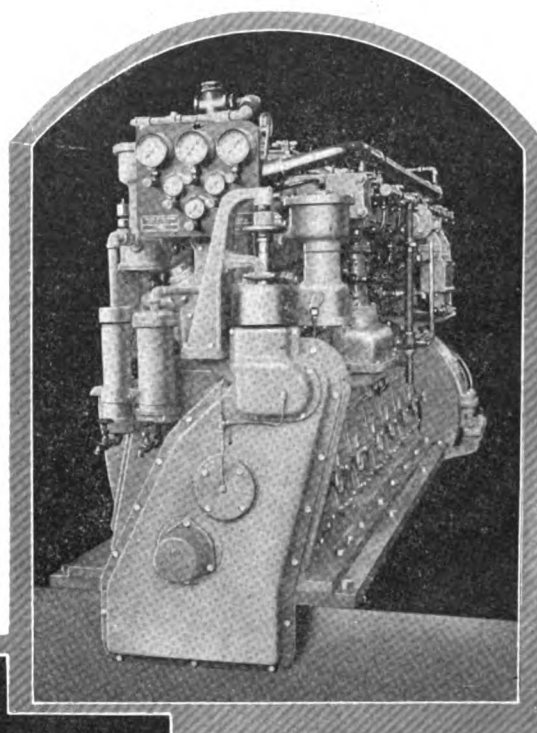
New York—Rost Angstman & Griesse, Inc., 1778 Broadway.

Seattle—H. W.

Winton

OIL DIESEL TYPE ENGINES

"GUINIVERE" is a 195' x 52' 5" x 15' Auxiliary Schooner Yacht owned by Mr. Edgar Palmer. Designed by A. Loring Swasey and built by Geo. Lawley & Son Corp. The largest fore and aft Auxiliary Schooner Yacht ever built. Speed, 11 knots per hour under power.



CLEVELAND, OHIO, U. S. A.

Harrett, Sunset Engine Co.

San Francisco—F. G. Bryant, 424 Ellis Street

-and in Calcutta

UP the Hugli at Calcutta is one of the Vacuum Oil Company's oil stations. As at all the other stations, the correct Gargoyle Marine Oils are stocked for the scientific lubrication of Diesel Type Engines.

There are over 250 of these stations at ports along the sea lanes all over the world. They are outposts of scientific lubrication.

"Skippers" and "Chiefs" of motor ships know them. They know that at these ports they can buy the Gargoyle D.T.E. Oils recommended for their engines.

Gargoyle D.T.E. Oils have played a leading part in the development of Diesel Type Engines for motorships. Leading Diesel Engine manufacturers recommend these oils for the lubrication of their engines.

Actual experience has proven that Gargoyle D.T.E. Oils minimize abrasion, corrosion and many of the troubles peculiar to Diesel Type Engines when used in motorships.

Send for the booklet on Gargoyle D.T.E. Oils. It contains valuable information on the various uses of these oils as related to the lubrication of Diesel Type Engines.



Marine Oils

A grade for each type of service



VACUUM OIL COMPANY

Specialists in the manufacture of high-grade lubricants for every class of machinery. Obtainable everywhere in the world.

NEW YORK, U.S.A.

SKANDIA PACIFIC OIL ENGINE COMPANY

SKANDIA OIL ENGINES

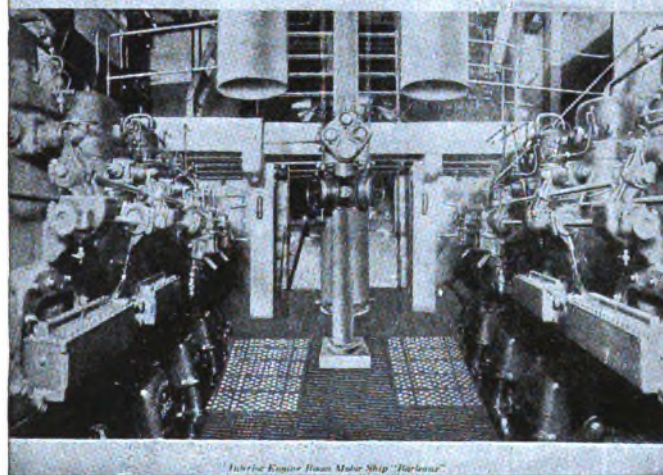
Make Compact Installations
(Marine and Stationary)

Operate on Low
Gravity, Crude
or Fuel Oils

5 B.H.P. to
500 B.H.P.



Motor Ship "Barbours," equipped with two 540 Horsepower Skandia Direct Steamable Engines



Interior Engine Room Motor Ship "Barbours"

550,000 B.H.P.
Now in Use and
on Order

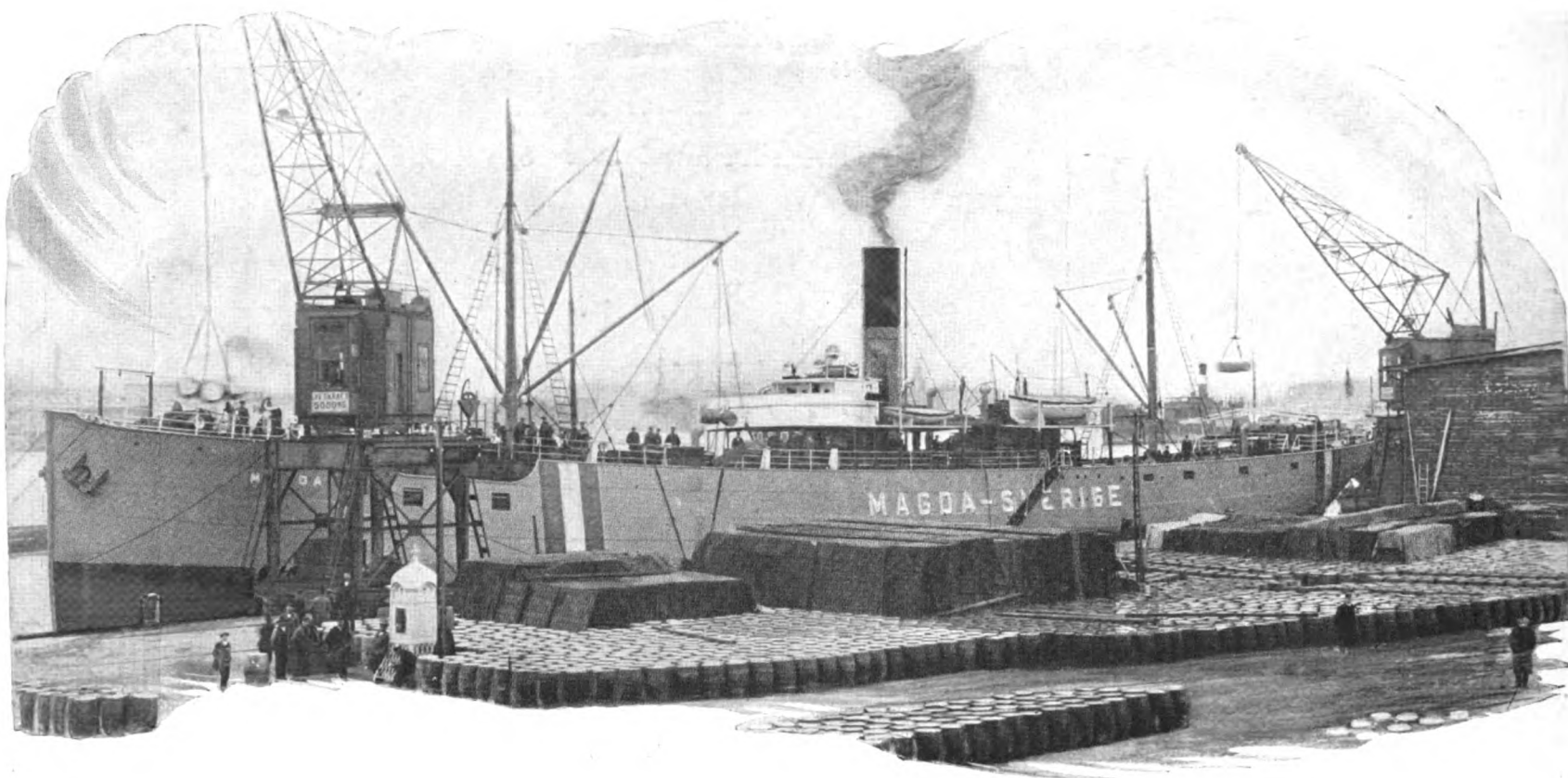
5 B.H.P. to
500 B.H.P.

SKANDIA PACIFIC OIL ENGINE COMPANY
WORKS: OAKLAND, CALIFORNIA, U. S. A.

Northwestern Agents SKANDIA ENGINEERING CO.
101 Grand Trunk Dock, Seattle, Wash.

Eastern Agents H. S. JOHANNSEN
25 West 43rd Street, New York, N. Y.

SKANDIA MARINE OIL ENGINES



-and in Stockholm

THE numerous islands that lie between Stockholm and the open sea, threaded by a main channel called the Saltsjö, have given this city the name of "The Venice of the North."

In this picture may be seen the first American Oil that arrived in Sweden after the closing of the agreement between the Allies and the Swedish Government.

Gargoyle Marine Oils are on sale in Stockholm. Representatives there are prepared to recommend the proper oils for scientific lubrication of Diesel Type Engines in motor ships and for all other types of marine engines. They can supply the proper oils to scientifically lubricate all marine machinery.

The Stockholm station is one of over 250 similar stations prepared to make recommendations for scientific lubrication and to supply the correct oil. Ship Captains and Chief Engineers are constantly availing themselves of this service.

Gargoyle Marine Oils may be bought at these stations or they may be ordered at the home port and delivered when needed at any station.

What assurance have you that *your* motor ship will be scientifically lubricated? Why not make sure? Ask us to recommend the correct oils for all your marine machinery.



Send for the booklet
on Gargoyle D. T. E. Oils.

Marine Oils

A grade for each type of service

VACUUM OIL COMPANY

Specialists in the manufacture of high-grade lubricants for every class of machinery. Obtainable everywhere in the world.

NEW YORK, U.S.A.

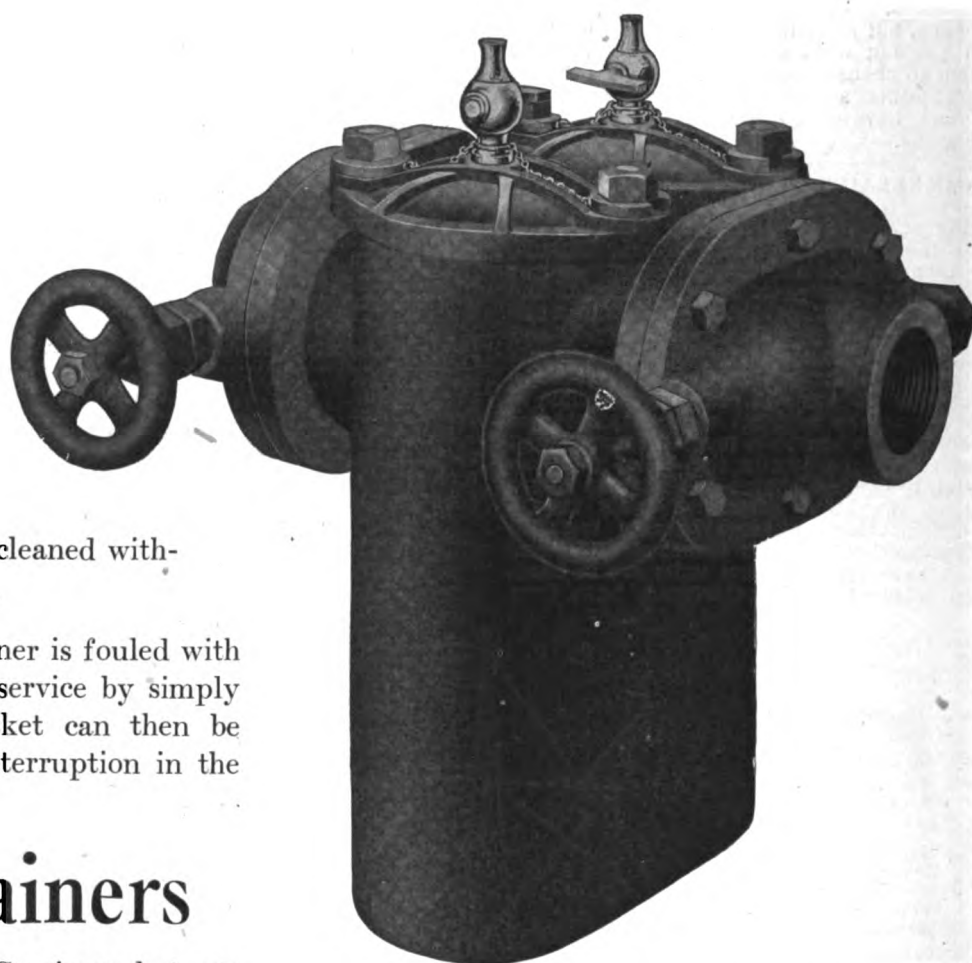
STRAIN Your Oil

Both fuel and lubricating oils contain some solid matter which must be removed from them before they can be used with any degree of satisfaction. To do this it is necessary to use some kind of a strainer, so why not use the Twin—a Strainer that can be cleaned without shutting off the supply?

When one basket of a Twin Oil Strainer is fouled with solid matter, a clean one is put into service by simply shifting two valves. The dirty basket can then be cleaned at leisure, and there is no interruption in the supply of clean oil.

Twin Oil Strainers

give the same service as two single Strainers but are more convenient to operate, require less space for installation and do away with all extra valves and piping necessary to connect up. These are features that led to their being used in submarines and destroyers for the Navy and in cargo boats for the Merchant Marine.



Twin Oil Strainers are furnished in sizes from 1 in. to 5 in. (2½ in. and larger sizes have flanged connections). Baskets of any perforation from 1-64 in. up. **Complete information in Bulletin "AA."**

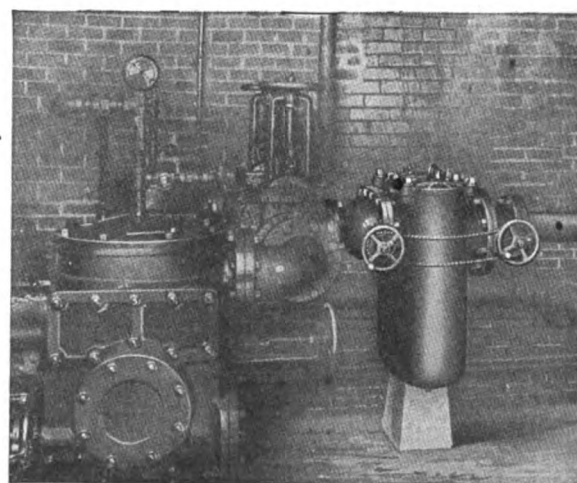
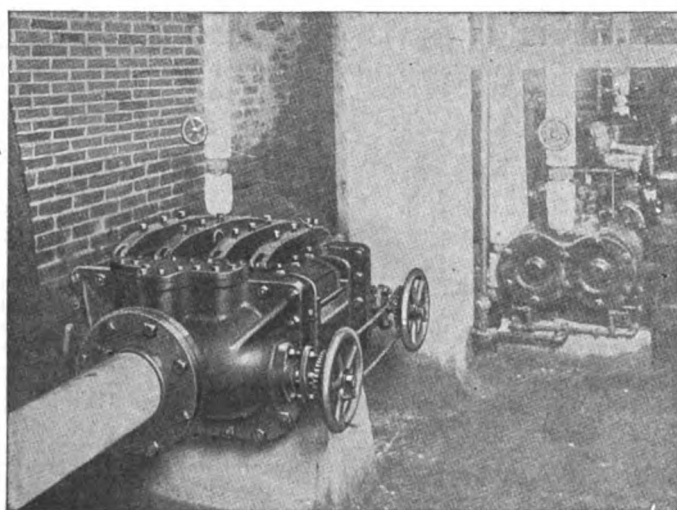
ELLIOTT COMPANY

431 Grant Street

Pittsburgh, Pa.

Twin Oil Strainers in lubricating oil system of a turbine installation at Carnegie Institute of Technology. The strainer at the left is an 8-in. Type "S" and is installed in the lubricating oil suction line. The Strainer at the right is a 5-in. Type "V" and is in-

stalled in the lubricating oil discharge line. This installation was made for the benefit of engineers sent to Carnegie "Tech" for a course of instruction by the Shipping Board during the war emergency.





- and in
Bombay

*Send for booklet on
Gargoyle D.T.E. oils*

HERE the primitive methods of the East sharply contrast with the ingenious mechanisms of the West. The motor car of the British sahib sweeps by the burden-laden coolie as he trudges along the road.

Captains and Chief Engineers of motorships know the Vacuum Oil Company station at Bombay. It is one of the more than 250 which they run across in all parts of the world. Like all of these stations, this one is constantly called upon to recommend oil for the correct lubrication of all types of Diesel engines. It supplies the correct grade of Gargoyle D. T. E. Oils, in any quantity that is needed.

Makers of Diesel Type engines endorse these oils for use in their engines. The protection they afford by their moisture-resisting qualities, their correct body and freedom from the tendency to emulsify, have made them a powerful contributor to Diesel engine efficiency from the beginning.



Marine Oils

A grade for each type of service

VACUUM OIL COMPANY

Specialists in the manufacture of high-grade lubricants for every class of machinery. Obtainable everywhere in the world.

NEW YORK, U.S.A.

-and in Kobe

WHEN a motorship puts into Kobe Harbor it makes its way past junks and sampans to its dock. In this harbor shipping, both old and new, mingle.

The Vacuum Oil Company is a step ahead of the ever improving mechanical developments that bridge the gap between wind-moved junks and modern motorships.

Our station at Kobe is prepared to specify and to supply the correct grade of Gargoyle D. T. E. Oil for all Diesel engines.

Masters and Chief Engineers of motorships are constantly taking advantage of this service

at all of the hundreds of stations in every part of the world.

They have discovered that when operating difficulties developed in their engines, faulty lubrication has often been the cause. Gargoyle D. T. E. Oils have been found to correct these faults.

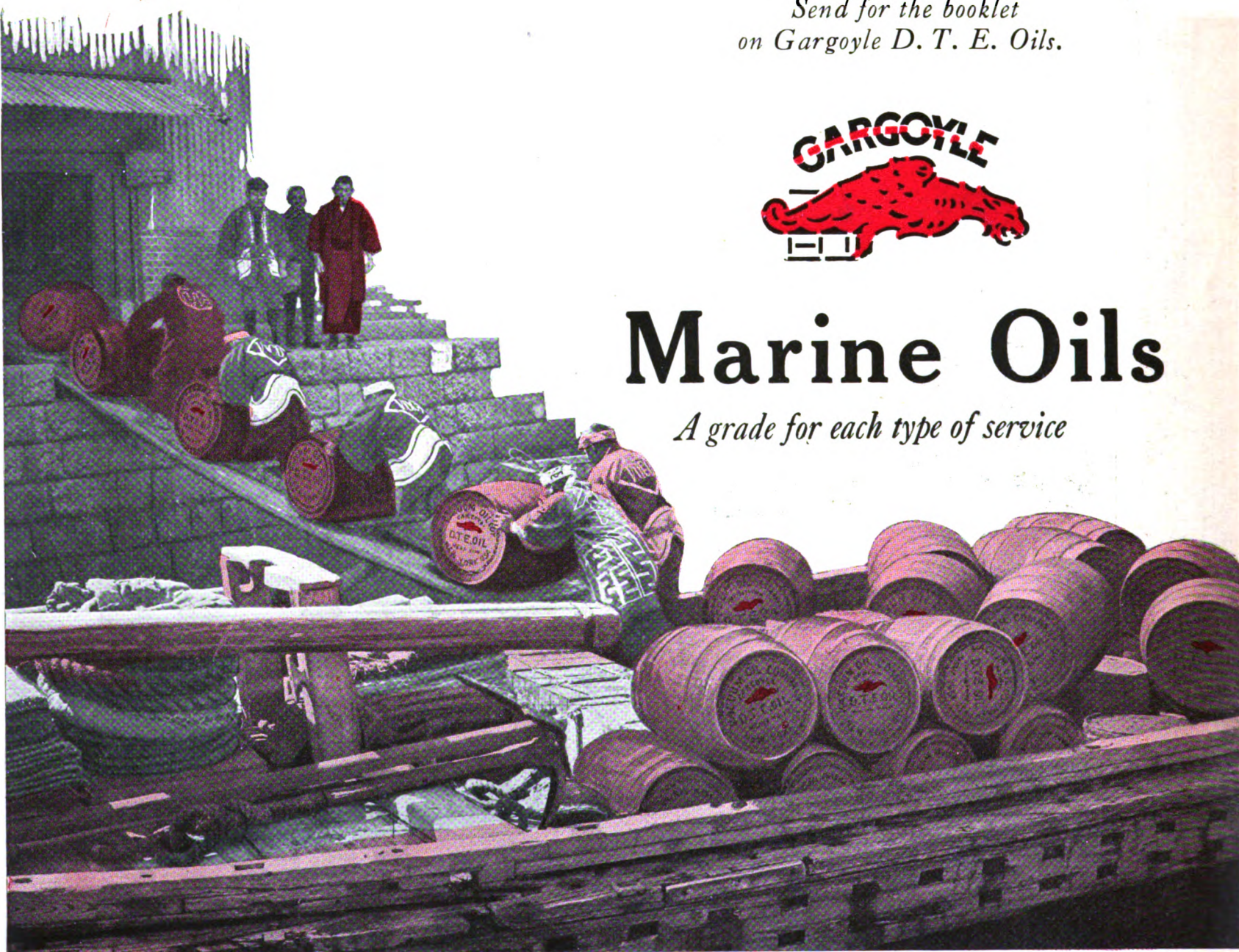
Marine Engineers the world over recognize the merits of Gargoyle D. T. E. Oils. Manufacturers of Diesel engines recognize the importance of correct lubrication and recommend the correct grade of Gargoyle D. T. E. Oils to be used in their engines.

*Send for the booklet
on Gargoyle D. T. E. Oils.*



Marine Oils

A grade for each type of service



VACUUM OIL COMPANY

Specialists in the manufacture of high-grade lubricants for every class of machinery. Obtainable everywhere in the world.

NEW YORK, U.S.A.

-and in Java

IN Soerabaia's Roads, crowded with native "praos" like the "praos" of the pirate raiders a hundred years ago, the modern motorship finds a Vacuum Oil Station.



Marine Oils

A grade for each type of service

Progress has substituted Diesel engines for human brawn and the wind. Gargoyle D.T.E. Oils have played a prominent part in this progress.

The staff at this station can recommend and supply the correct Gargoyle D.T.E. Oils for Diesel lubrication or the correct oils for any other marine uses.

There are over 250 of these Gargoyle stations along the sea lanes. Their value and convenience can be measured by the large numbers of Captains and Chief Engineers who use them constantly.

*Send for the booklet
on Gargoyle D. T. E. Oils*



VACUUM OIL COMPANY Specialists in the manufacture of high-grade lubricants for every class of machinery. Obtainable everywhere in the world. **NEW YORK, U.S.A.**

Winton

Smith Navigation Corporation

New York July 9, 1920

AUXILIARY SCHOONER "SHEREWOG"

Savannah, Ga.

Built

By Savannah Engineering
& Construction Corp.

Length O. A.	221 feet
Breadth	40 feet
Depth	18 feet 6 in.
Draft Loaded	20 feet 8 in.
Light Draft	10 feet 6 in.
Deadweight Tonnage	2,000

Launched November, 1917
 Cubic Capacity 75,000 feet
 Equipment 2—300 H.P., 6 Cylinder Model W-24
 Winton Oil Engines

Fuel Oil Capacity	172 Tons
Consumption per Hour	40 Gallons
Consumption per Day	960 Gallons
Speed Loaded	7 Knots

This vessel has been continuously employed in the Gulf, South America and West Indies trade as well as making a voyage to the U. K. and Continent with the best of success.

SMITH NAVIGATION CORPORATION,
Owners.

The New Winton
now ready—ha

WINTON ENGINE WORKS

New York—A. G. Griese, 120 Broadway

Seattle—H. W. Starrett, Sunset Engine Co.

OIL DIESEL TYPE ENGINES

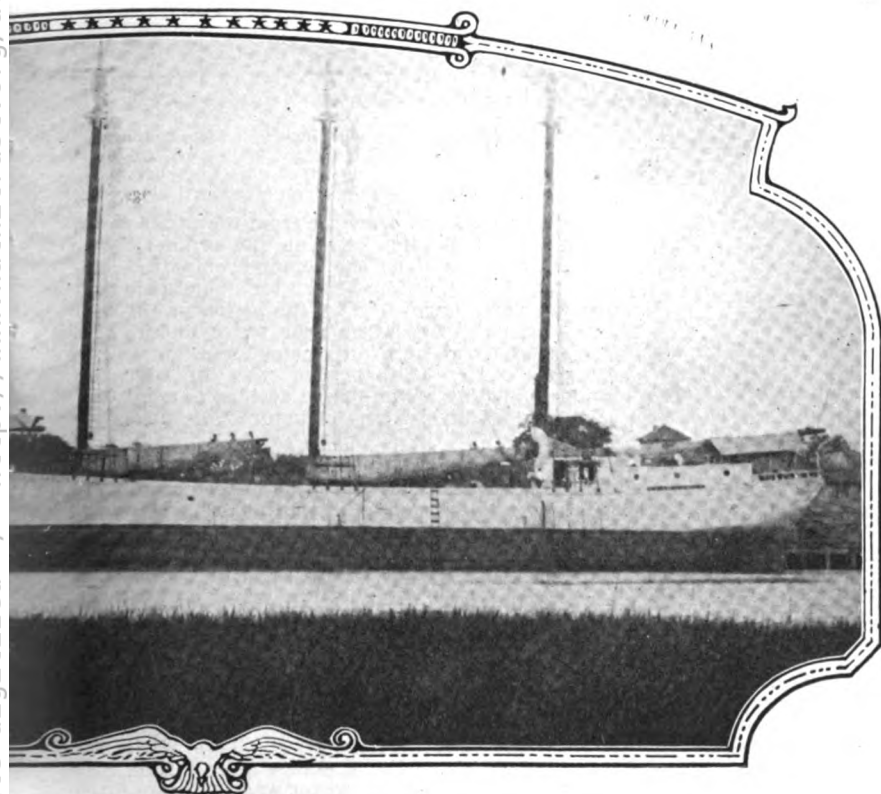
THE remarkable success attending Auxiliary Schooners equipt with Winton Oil Engines is arousing more than the average interest.

Last month appeared details of the successful operation of the Auxiliary Schooner "Chas. S. Gawthrop" with an initial six months' record without incurring any expenses for outside engine repairs.

Now comes the record of the Auxiliary Schooner "Sherewog" in operation nearly two years—and the owner's statement speaks for itself.

Is it to be wondered at that an increasingly large number of Ship Owners are installing Winton Oil Engines in their Auxiliary Schooners and Motorships?

1 Engine Catalog is received your copy?



WINTON OIL ENGINES
are manufactured in the following sizes:

Model	Bore	Stroke	Power	No. Cylinders
52	7½"	11"	50 H. P.	Three
53	7½"	11"	75 H. P.	Four
54	7½"	11"	115 H. P.	Six
58	11"	14"	150 H. P.	Four
35	11"	14"	225 H. P.	Six
24	13"	18"	300 H. P.	Six
40	13"	18"	450 H. P.	Eight

CLEVELAND, OHIO, U. S. A.

San Francisco—F. G. Bryant, 424 Ellis Street

Jacksonville—D. J. Carrison & Co.

©1920, Rex W. Wadman, Inc.

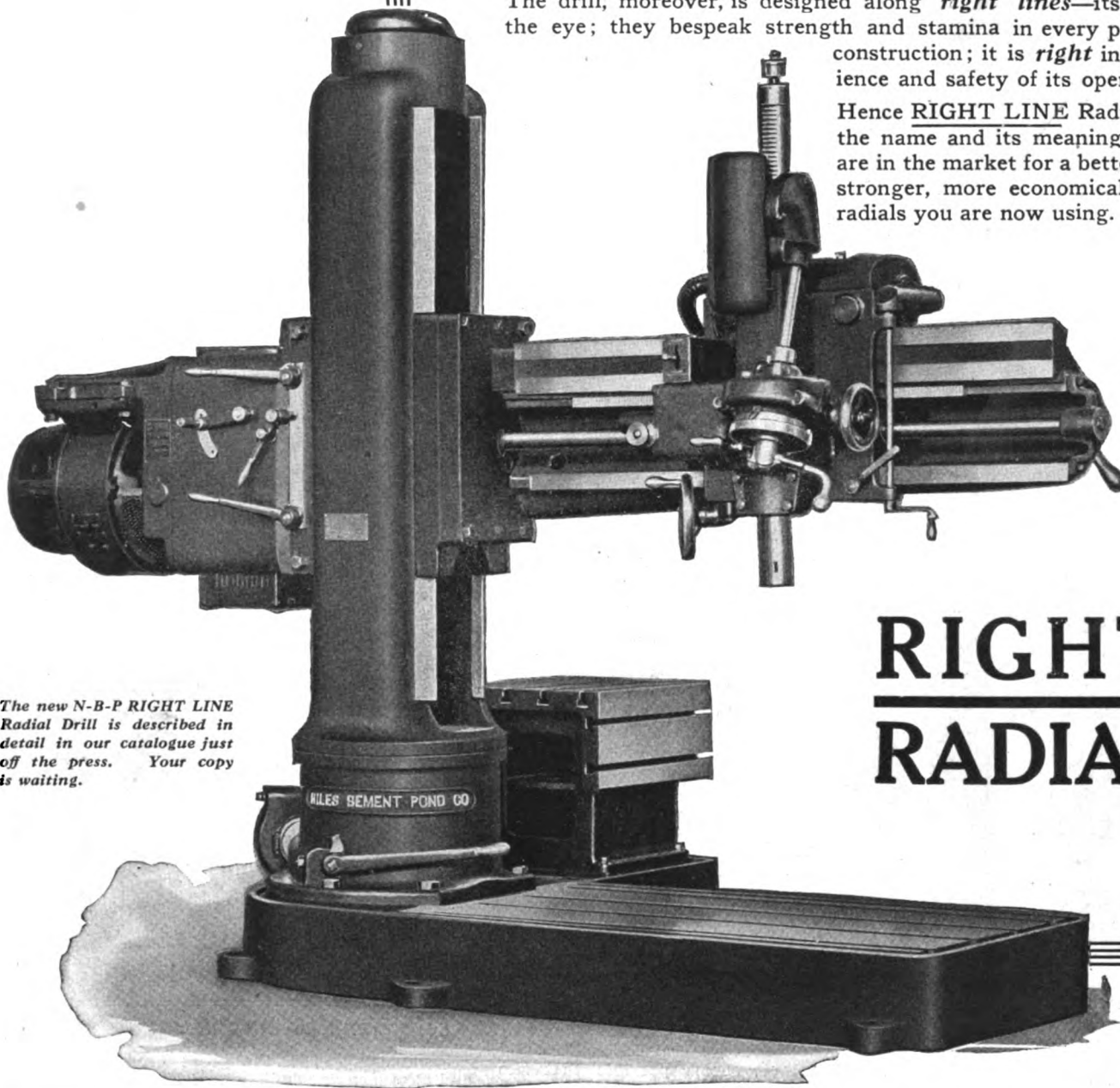
A Radical Advance in Drill Design

SOMEONE recently asked us why we called this new drill of ours the **RIGHT LINE** Radial. There are two very good reasons for this name, and a brief examination of the drill will suffice to make them clear.

First of all, since a *right line* is the shortest distance between two points, this word clearly describes the distinguishing feature of the machine,—the direct drive from motor to spindle saddle made possible by the double column construction.

The drill, moreover, is designed along *right lines*—its proportions please the eye; they bespeak strength and stamina in every part; it is *right* in construction; it is *right* in simplicity, convenience and safety of its operative controls.

Hence **RIGHT LINE** Radial Drill—remember the name and its meaning the next time you are in the market for a better, more convenient, stronger, more economical substitute for the radials you are now using.



The new N-B-P **RIGHT LINE** Radial Drill is described in detail in our catalogue just off the press. Your copy is waiting.

RIGHT LINE RADIAL DRILL

NILES-BEMENT-POND CO.

111 Broadway - - New York



— and in Manila

WHEN a lighter steams up the busy Pasig River, likely as not it is from a Motorship lying in the bay.

Progress has made rapid strides since the American flag first floated over Manila. Not the least striking example of this is seen in the development of this latest type of Ocean carrier.

The Vacuum Oil Company, always keeping pace with lubricating requirements, maintains an oil station at Manila. Here the correct grades of Gargoyle

D. T. E. Oils for any Motorship afloat can be obtained.

The merits of Gargoyle D.T.E. oils are well known in Motorship circles, and the resistance to emulsification—the ability to separate readily from water and other impurities—have made these oils the choice of a vast number of Motorship owners.

♦
*Send for the booklet
on Gargoyle D. T. E. Oils.*



Marine Oils

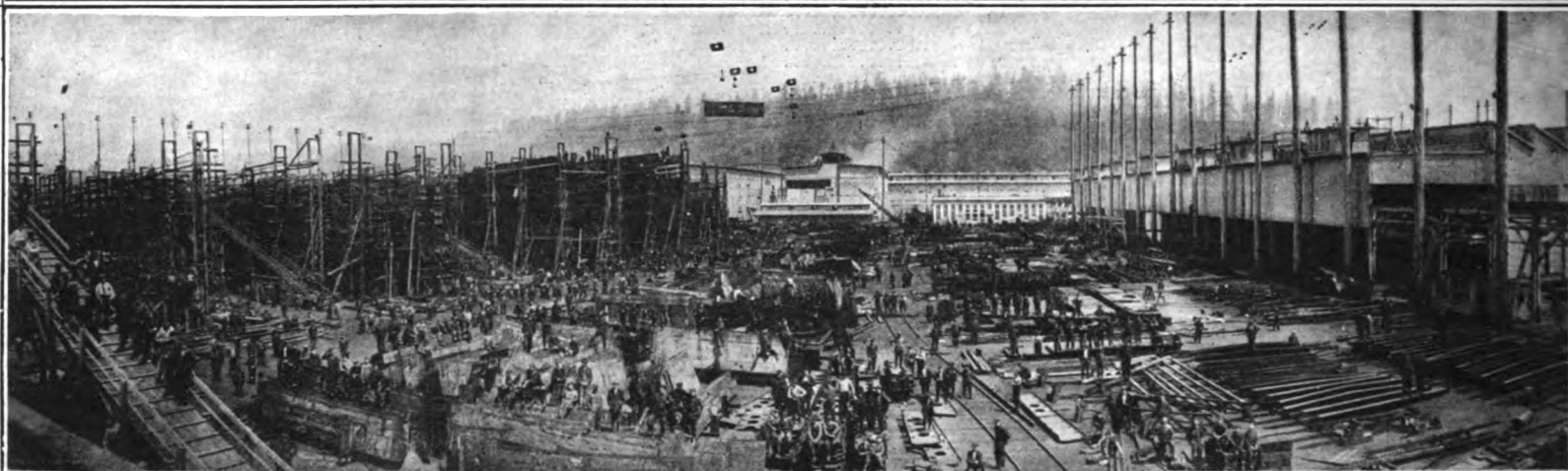
A grade for each type of service

VACUUM OIL COMPANY

Specialists in the manufacture of high-grade lubricants for every class of machinery. Obtainable everywhere in the world.

NEW YORK, U.S.A.

WORLD'S LARGEST SHIP REPAIR ORGANIZATION



CONSTRUCTION WAYS AT TACOMA PLANT

TWELVE SHIP
WAYS

.....

NINETEEN FLOATING
DOCKS

.....

TWO GRAVING
DOCKS

PLANTS

ROBINS DRY DOCK & REPAIR CO.
ERIE BASIN, BROOKLYN

TIETJEN & LANG DRY DOCK CO.
HOBOKEN, NEW JERSEY

TEBO YACHT BASIN CO.
FOOT OF 23RD ST., BROOKLYN

CLINTON DRY DOCKS INC.
FOOT OF CLINTON ST., BROOKLYN

TODD DRY DOCK & CONSTRUCTION CORP.
TACOMA, WASHINGTON.

TODD DRY DOCKS INC.
HARBOR ISLAND, 16TH AVE., S.W.,
SEATTLE, WASHINGTON.

WHITE FUEL OIL ENGINEERING CORP.
MECHANICAL OIL BURNING SYSTEMS
742 EAST 12TH ST., NEW YORK

TODD SHIPYARDS CORPORATION

CABLE ADDRESS: ROBIN, N.Y.
ALL CODES

MAIN OFFICE 15 WHITEHALL ST., NEW YORK

TELEPHONE: BOWLING GREEN
6900

-and in Wellington

WALLED in by abrupt hills, the capital of New Zealand boasts a harbor that is ideally situated.

Here motorships from all over the world lie side by side at anchor. And here, as at over 250 of the world's principal ports, a Gargoyle Marine Oils station will be found.

Masters and Chief Engineers of motorships have learned to count on these stations. They contract at a home port for Gargoyle D. T. E. Oils for delivery as required at any port of call.

Gargoyle D. T. E. Oils are well known throughout the motorship industry. They afford correct lubrication to all types of Diesel engines.

*Send for booklet
on Gargoyle D. T. E. Oils*



Marine Oils

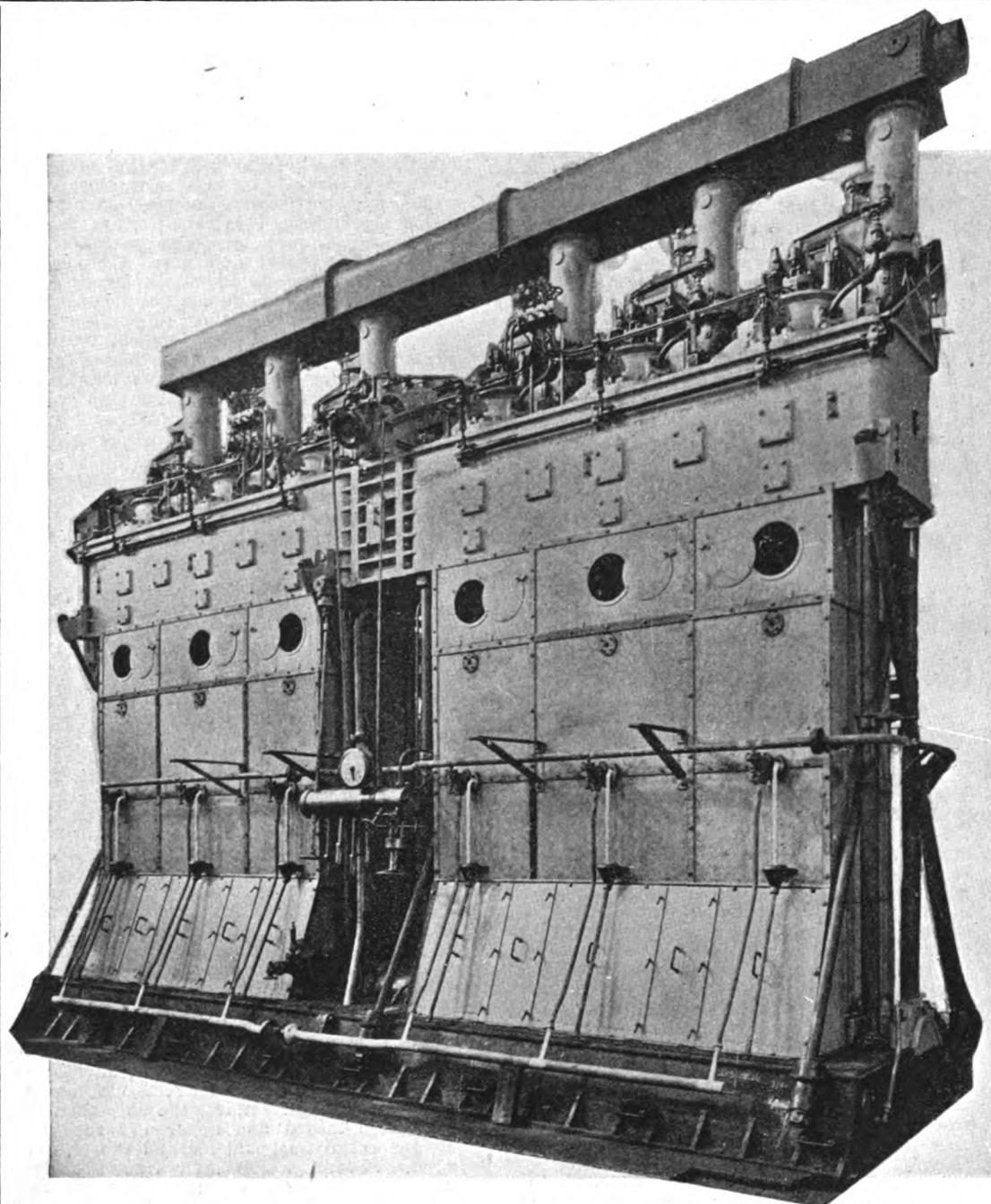
A grade for each type of service



VACUUM OIL COMPANY

Specialists in the manufacture of high-grade lubricants for every class of machinery. Obtainable everywhere in the world.

NEW YORK, U.S.A.



A 1350 I.H.P. Werkspoor Diesel Engine of the Latest Type with its New Simplified Reversing Mechanism. This Engine is a Distinct Advance Over Any Other Make. Note How "Clean" the Engine is. There is no Better Engine Today.

ANOTHER LIE

THE WERKSP
MAKE ARR
ANOTHER C
TYPE DIESEL
ENGINEERING

WERKSPoor D
BY TEN LE
(Including

EXISTING AMERICAN

NEWPORT NEWS SHIPB
NEA

SKANDIA PACI

NEW YORK SHI

LET THEIR ST

EXPERT ENGINEERS FROM THE WERKSPoor WORKS ARE NOW IN THE U

AN ENGINE BUILT OF STEEL

The Two Illustrations on this Page Show the Remarkable Strength and Accessibility of the Combination of Vertical and Diagonal Steel Columns in Conjunction with the Rigid Cast-Iron Cylinder-Beam and Cast-Iron Columns at the Back of the Engine. These are Splendid Features of Construction that Characterize the Werkspoor Design. All Stresses of Combustion are Absorbed by the Steel Columns.

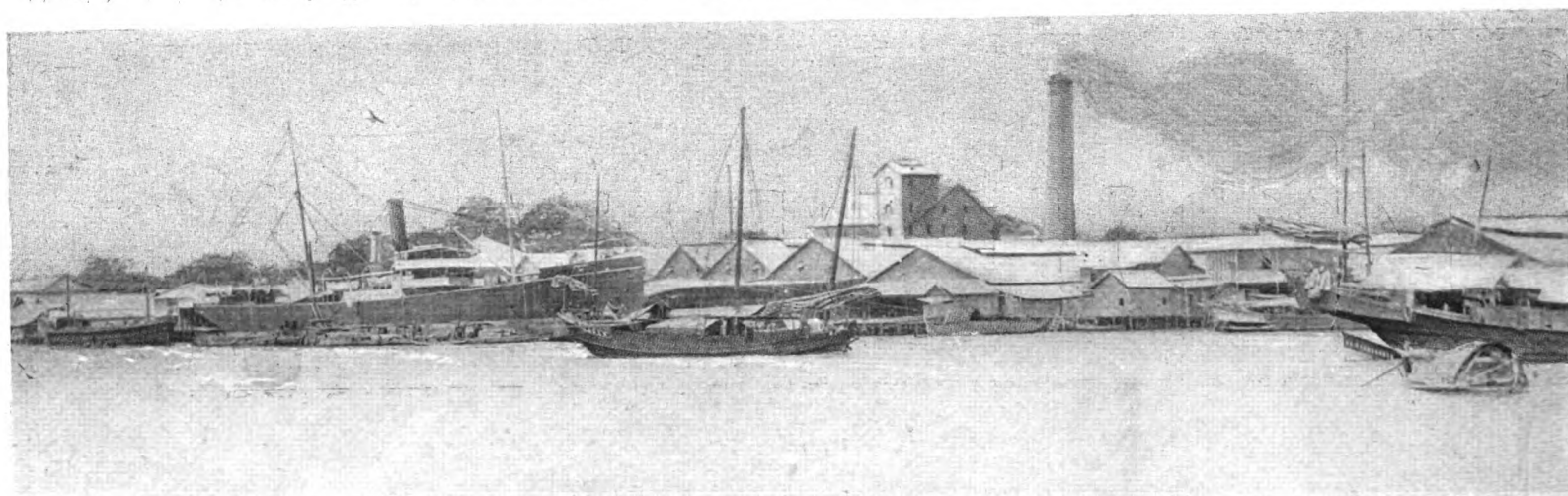
Communications

FRE
REPRESENTAT
ROOM
44 WHITEHALL ST

WERKSPoor LEADS—OTHERS FOLLOW!

THE FIRST DIESEL ENGINE WITH SHORT PISTONS, CROSSHEADS AND GUIDES WAS BUILT
NOW ADOPTED BY ALL LEADING BUILDERS. THE WERKSPoor SYSTEM OF CYLINDER-BE
BY MANY BUILDERS OF OTHER LEADING MAKES OF DIESEL EN

THE FIRST FULL-POWERED OCEAN-GOING STEEL MOTORSHIP WAS DRIVEN BY A



-and in Bangkok

THE picture speaks for itself. Many a motorship "chief" will recognize the Vacuum Oil Company's launch which plies up and down the Me Nam River in Bangkok, Siam.

Bangkok is another one of the many ports the world over where motorships can obtain scientific lubrication from the Vacuum Oil Company.

Gargoyle D.T.E. Oils give exceptional service on Diesel Type engines. Many motorship engineers tell us that Gargoyle D.T.E. Oils largely eliminate abrasion and corrosion and remedy other troubles to which Diesel Type engines are subject.

Severe service conditions have little effect on Gargoyle D.T.E. Oils. We know a number of motorships that for over three years have used the original charge of Gargoyle D.T.E. oils with very little make-up oil added.

The recommendation of most Diesel Type engine manufacturers and the use of Gargoyle D.T.E. oils by most companies using fleets of motorships is unquestionable endorsement of the economy and efficiency of Gargoyle D.T.E. oils.

Send for the booklet on Gargoyle D.T.E. Oils. It contains valuable information on the various uses of these oils as related to the lubrication of Diesel Type Engines.



Marine Oils

A grade for each type of service

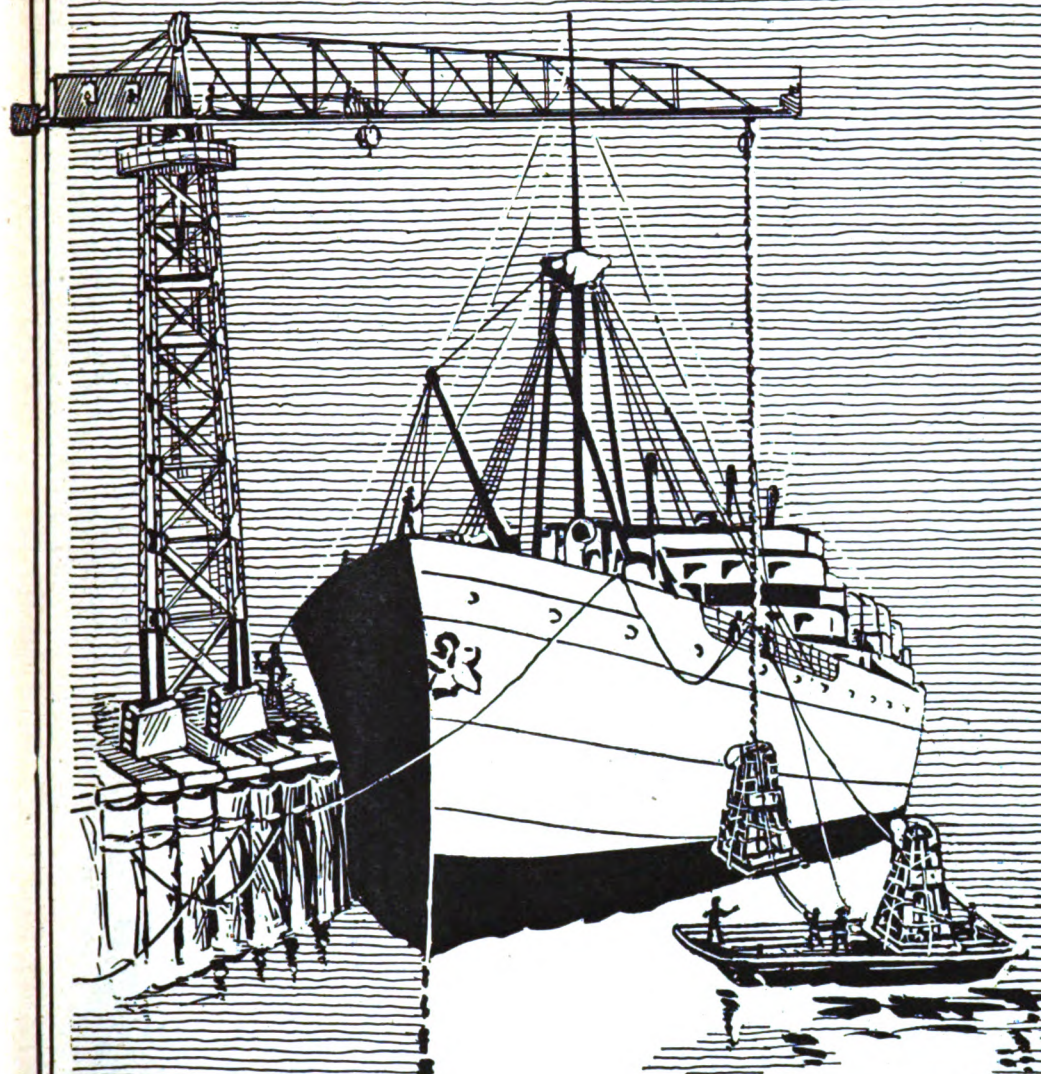
VACUUM OIL COMPANY

Specialists in the manufacture of high-grade lubricants for every class of machinery. Obtainable everywhere in the world.

NEW YORK, U.S.A.

OPPOSED-PISTON OIL-ENGINES

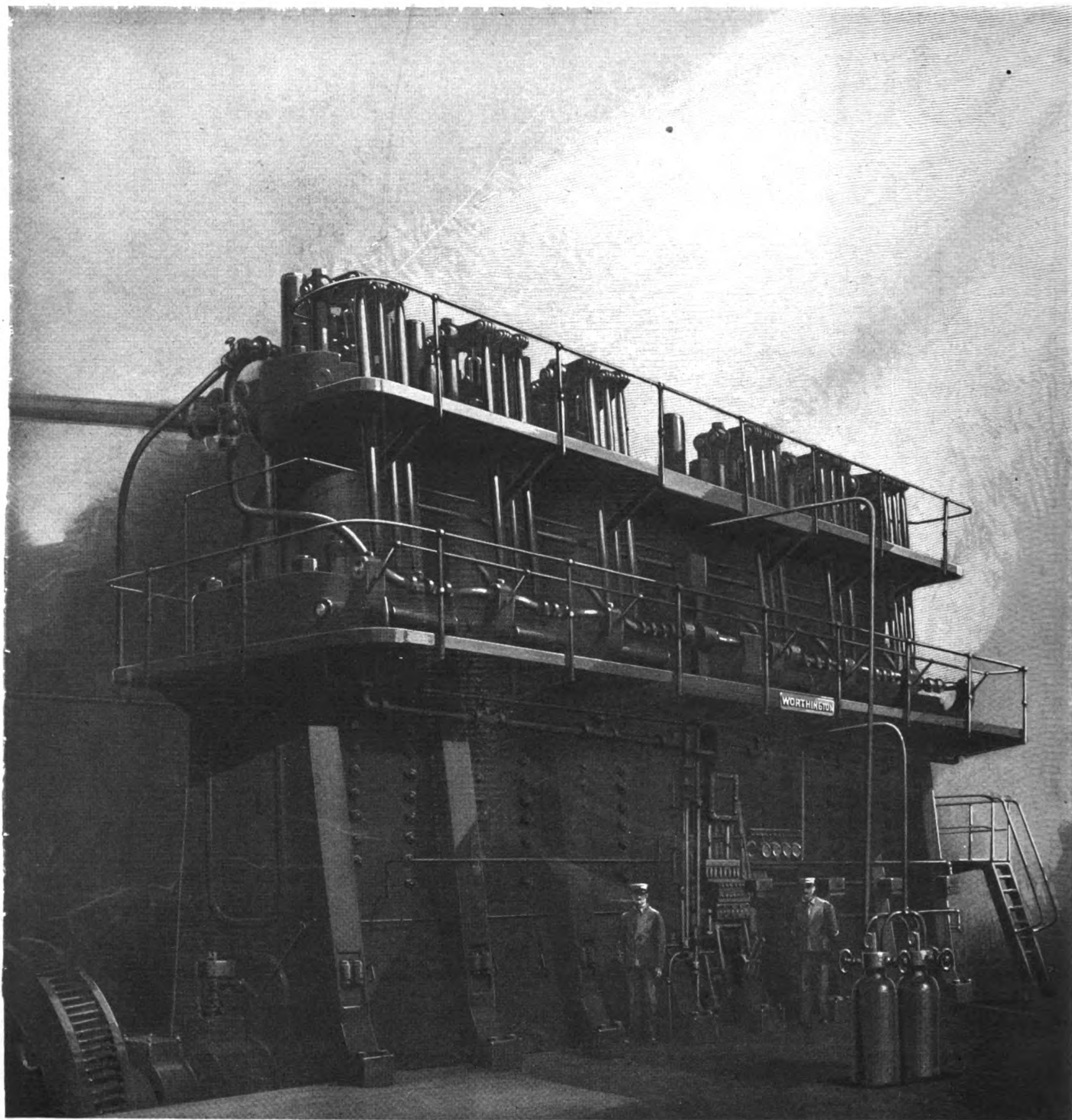
~ JUNKER SYSTEM ~



*for
Merchant Ships*

Applications for American Shop Rights Should Be Addressed to
THE OPPOSED-PISTON OIL-ENGINE COMPANY, Inc.
511 Fifth Avenue, New York, N. Y.

Owners of the American rights of the Junkers Two-Cycle Opposed-Piston Diesel-type Marine and Stationary Oil-Engine under United States patents, Nos. 891,078, 1,077,718, 1,102,590, 1,117,497, 1,117,498, 1,127,772, 1,162,173, 1,125,113, 1,186,205, 1,207,799, 1,231,903 and others. Licenses have already been granted to eleven companies in England, France, Russia, Germany and the U. S. A.



FROM MAMMOTH MAIN ENGINES

WORTHINGTON

Deane Works, Holyoke, Mass.

Blake & Knowles Works
East Cambridge, Mass.

Worthington Works
Harrison, N. J.

Laidlaw Works, Cincinnati, Ohio.

Hazleton Works,

Hazleton, Pa.

Gas Engine Works, Cudahy, Wis.

Power & Mining Works
Cudahy, Wis.

Snow-Holly Works
Buffalo, N. Y.

Epping-Carpenter, Pittsburgh, Pa.



We have invested in the future of the Diesel-driven ship

THE big, All-American designed Worthington Marine Oil Engine erected at our Snow-Holly works, Buffalo, N. Y., is our contribution to America's motor driven merchant marine.

We have neither borrowed nor bought foreign rights to manufacture. The Worthington engineering committee utilized none but "home talent". The Worthington organization unreservedly sponsor the Worthington Marine Oil Engine as fully up to the standard of all other Worthington Steam and Motorship apparatus.

We invite inquiry as to the great advantages enjoyed by motorizing cargo carriers.

WORTHINGTON PUMP AND MACHINERY CORPORATION

*Executive Offices: 115 Broadway, New York City
Branch Offices in 24 Large Cities*

W 334.88

TO SMALLEST CENTRIFUGAL PUMPS

WORTHINGTON

Deane Works, Holyoke, Mass.

Blake & Knowles Works
East Cambridge, Mass.

Worthington Works
Harrison, N. J.

Laidlaw Works, Cincinnati, Ohio.

Hazleton Works,

Hazleton, Pa.

Gas Engine Works, Cudahy, Wis.

Power & Mining Works
Cudahy, Wis.

Snow-Holly Works
Buffalo, N. Y.

Epping-Carpenter, Pittsburgh, Pa.



SULZER

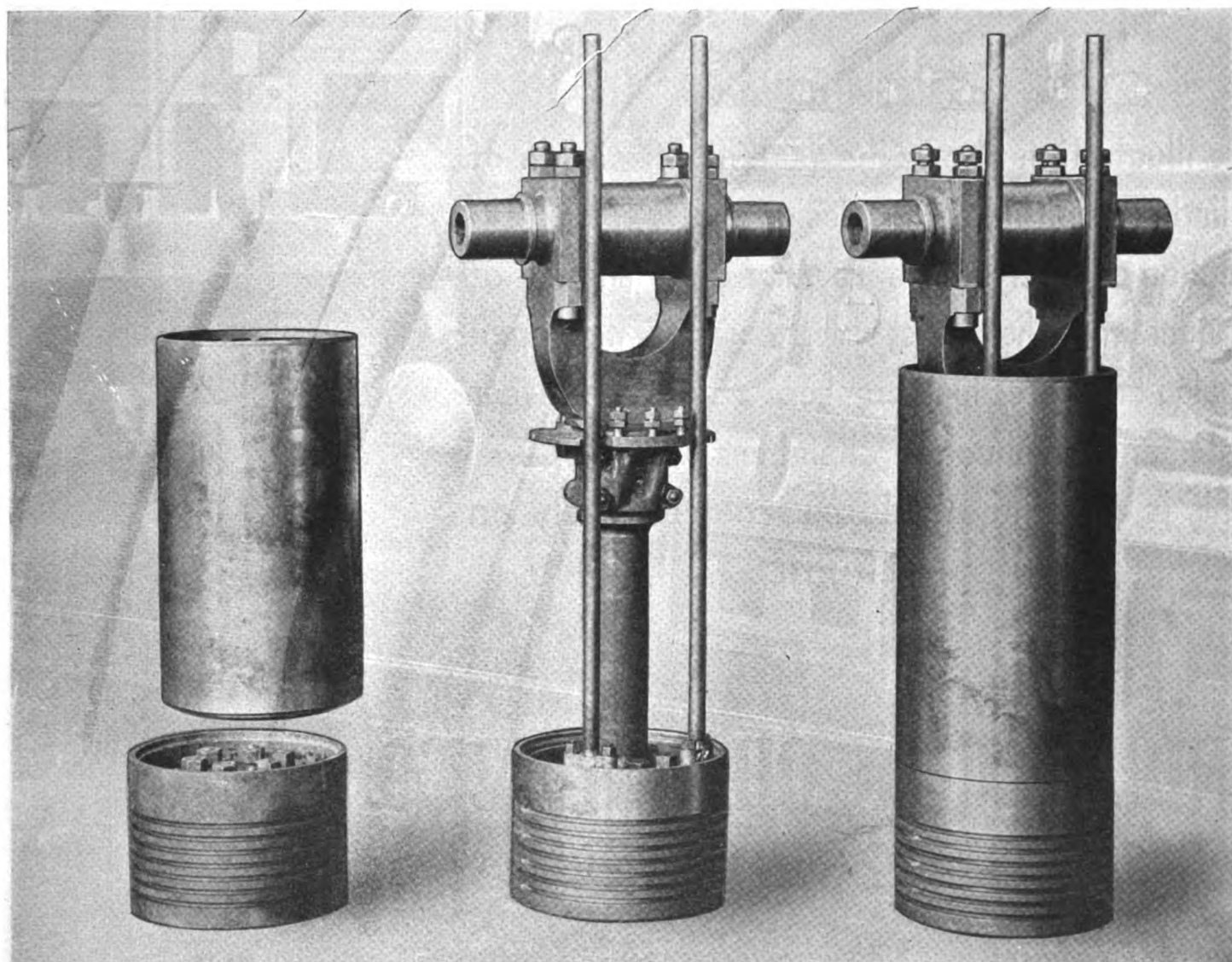


TWO-CYCLE DIESEL MARINE ENGINES

SULZER FRÈRES
WINTERTHUR
SWITZERLAND

BUSCH SULZER BROS.
DIESEL ENGINE CO
ST. LOUIS, MO.

BUSCH-SULZER TWO-CYCLE MARINE DIESEL



PISTON SKIRT

Is attached to the rod and has sliding fit into piston head to allow for expansion. Its sole function is to cover the scavenging and exhaust ports in the cylinder wall.

PISTON

Carries the piston rings and is bolted to circular flange on piston rod. It is water cooled through patented telescopic tube arrangement. The top face is concave, forming, in conjunction with the concave under face of cylinder head, an ideal shape for combustion space.

CROSSHEAD PIN

Bolts to forked end of piston rod with shims between for adjusting compression in cylinder. The middle forms pin for connecting rod while the ends carry the crossheads.

BUSCH-SULZER BROS.-DIESEL ENGINE CO.
ST. LOUIS, MO.

EASTERN SALES OFFICE
60 BROADWAY, NEW YORK

WESTERN SALES OFFICE
RIALTO BLDG., SAN FRANCISCO

The illustration shows the WERKSPÖÖR design of cylinder construction. This design allows a free circulation of water around the valve cages and top of cylinder where the highest temperatures are developed. It also eliminates high pressure gaskets between water and combustion chambers.

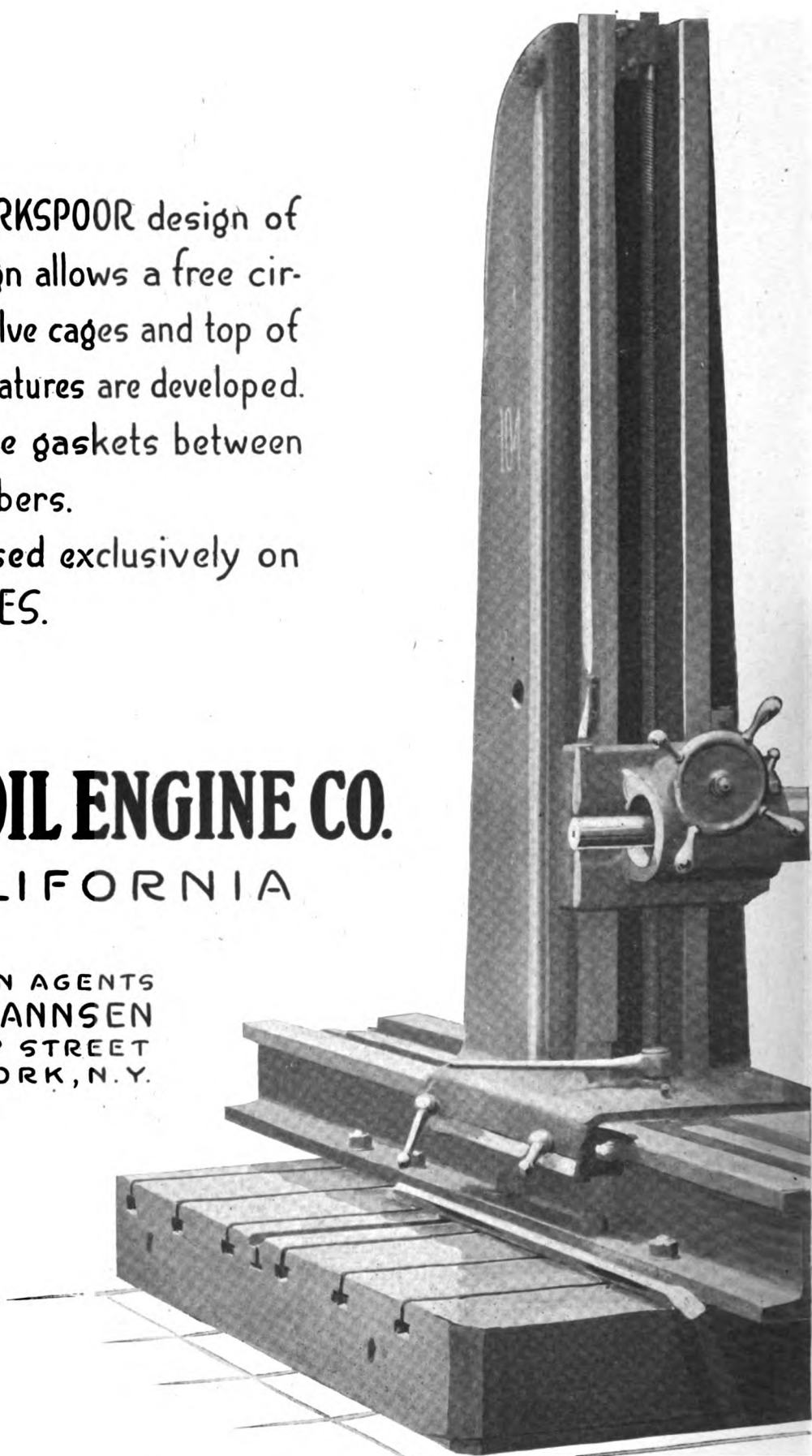
This is a patented feature used exclusively on WERKSPÖÖR DIESEL ENGINES.

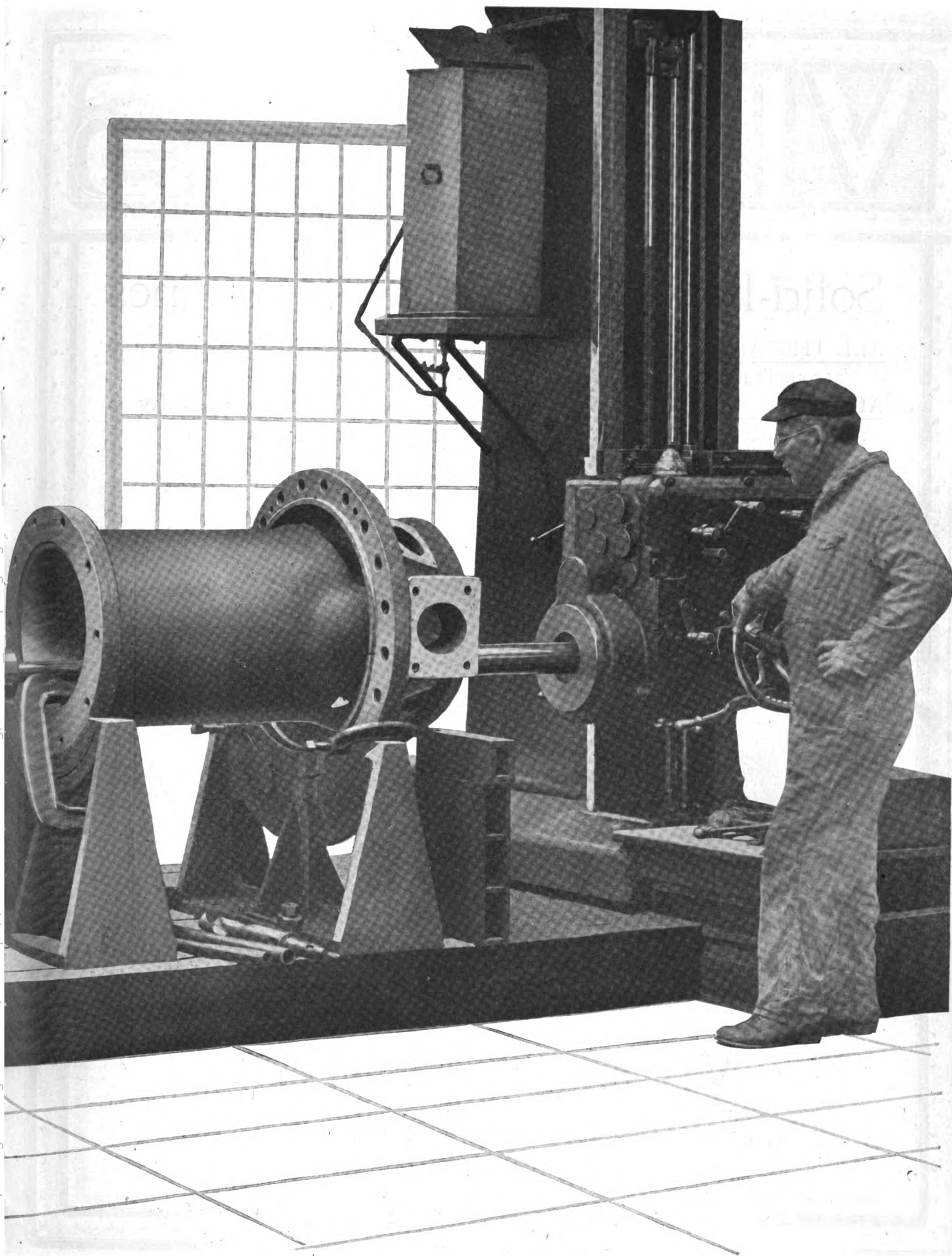
SKANDIA PACIFIC OIL ENGINE CO.

OAKLAND, CALIFORNIA

NORTHWESTERN AGENTS
DIESEL ENGINEERING CO.
101 GRAND TRUNK DOCK
SEATTLE, WASH.

EASTERN AGENTS
H. S. JOHANNSEN
25 W. 43RD STREET
NEW YORK, N. Y.





VICKERS

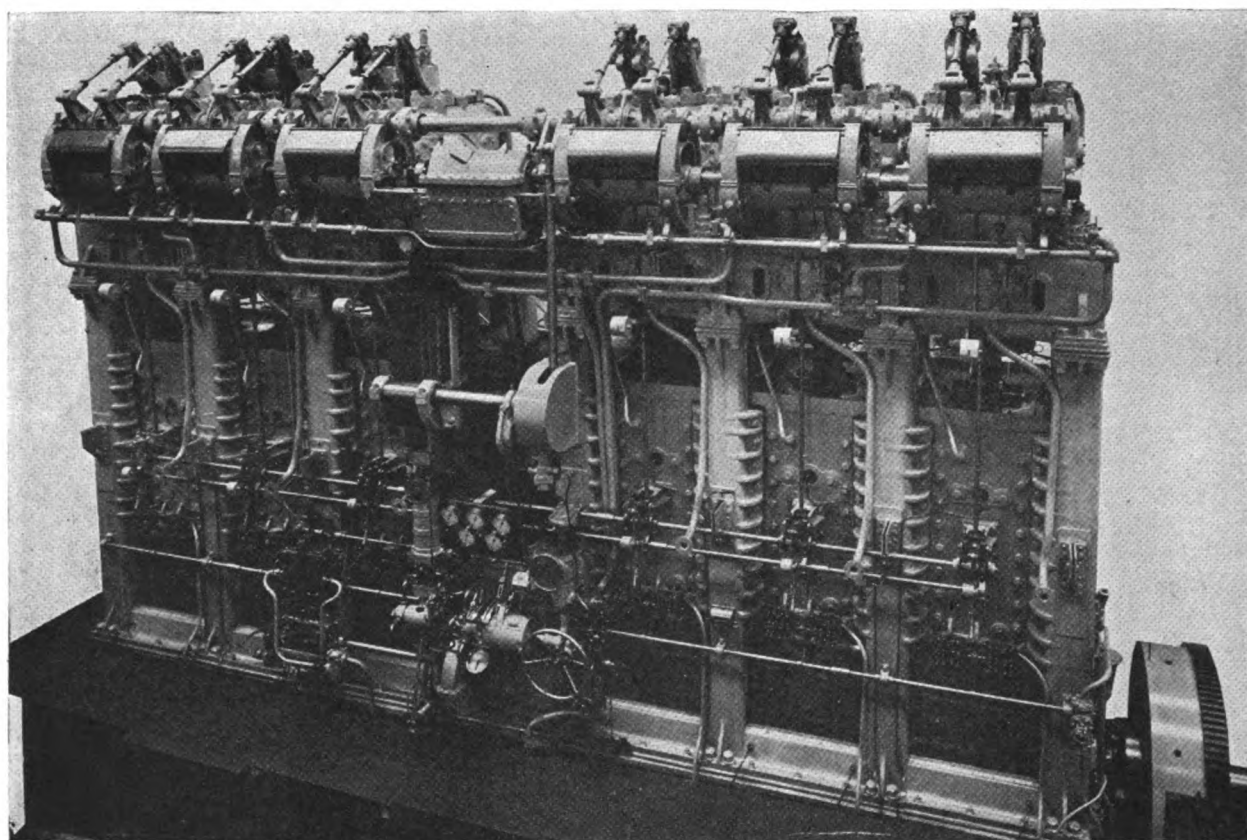
Solid-Injection Marine Oil-Engines

ALL THE ADVANTAGES of the Diesel Engine without the danger and complication of the Blast-Air Compressor.

ALL THE ADVANTAGES of the Surface-Ignition Engine without delay in starting, troublesome lamps, or hot-bulbs.

LOW FUEL-CONSUMPTION—down to 0.38 lb. per brake horse-power.

(This corresponds to 0.28lbs. per indicated horse power in the ordinary Air-Injection Diesel Engine).



One of the 1250 brake h. p. Vickers solid-injection oil-engines of the tanker "Narragansett."

VICKERS LIMITED

HEAD OFFICE, BROADWAY, LONDON, S. W. 1.
MARINE ENGINE WORKS, BARROW-IN-FURNESS, ENGLAND

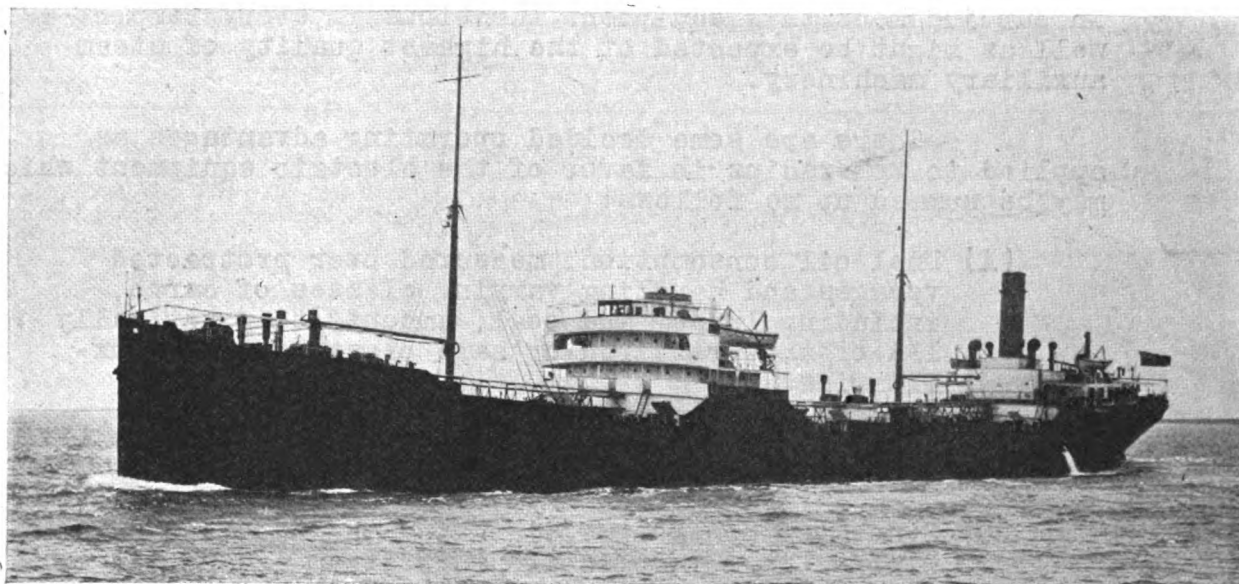
AMERICAN OFFICE:
2550 WOOLWORTH BUILDING, NEW YORK, N. Y.

VICKERS

No Air-Blast Compressor

Vickers Limited, who have been in the High-Power Marine Oil-Engine Industry since its early days, have not fitted an Air-Compressor to their Marine Diesel Engines since 1911. Nearly 500,000 B.H.P. in large units constructed.

Two of six 750 shaft h. p. Vickers Diesel Engines were fitted in a ship that during the war was run on a service so urgent that for 18 MONTHS NO BEARING OR CYLINDER WAS OPENED, and apart from occasional grinding-in of the spray-valves, THE ONLY VALVE OPENED WAS ONE EXHAUST-VALVE for easing of the spindle. Yet the engines were "running like clockwork" when the failure of the Auxiliary STEAM plant led to the ship being laid up for overhaul. Vickers' latest merchant-ship engines are improvements on these.



The new Vickers' built and engined oil-carrying motorship "Narragansett," the first of a fleet of sister motor-vessels now building.

VICKERS LIMITED

HEAD OFFICE, BROADWAY, LONDON, S. W. 1.
[MARINE ENGINE WORKS, BARROW-IN-FURNESS, ENGLAND

AMERICAN OFFICE:

2550 WOOLWORTH BUILDING, NEW YORK, N. Y.

CUNNI

ELECTRIC MARINE

J. E. CHILBERG
OWNER AND MANAGER
H. F. WEEDEN
PORT CAPTAIN
B. J. FOTHERINGHAM
CASHIER

CABLE ADDRESS
CHILBERG, SEATTLE
CODES
BENTLEY'S NEW EDITION
SCOTT'S 10TH EDITION



CHILBERG LINE

14TH FLOOR ALASKA BUILDING
SEATTLE, WASHINGTON, U.S.A.

MOTORSHIPS:
"BABINDA"
"BALCATT"
"BENOWA"
"BOOBYALLA"
"BORRIKA"
"CETHANA"
"CHALLAMBA"
"COOLCHA"
"CULBURRA"

January 10th, 1920.

Allan Cunningham Co., Inc.,
Seattle, Wash.

Dear Sirs:

You have requested our observations of the general performance of the electrically driven deck machinery, such as Anchor Windlasses, Cargo Winches, Capstans, Steering Gears, etc. furnished by your Company for our various full powered Motorships, and we can reply briefly by stating that in our judgment this equipment functions in every respect as well as might be expected of the highest quality of steam auxiliary machinery.

There are some decided operating advantages as applied to Motorships in favor of the electric equipment which may be summed up as follows:

- (A) Fuel oil consumption, measured over protracted voyages and handling varying classes of cargo, including lumber and coal, amounts to practically 1/4 of that required by same class of steam auxiliaries.
- (B) Cost of upkeep less than the average steam installation.
- (C) System of control provided for the electric cargo winches is more positive than steam and serves to increase dispatch in handling cargo.
- (D) Electric power available at a moments notice and can be shut off or reduced according to actual requirements - No unnecessary waste.

Without giving this subject the space it deserves, the above are a few features that suggest themselves, which we hope may be of interest.

Yours faithfully,

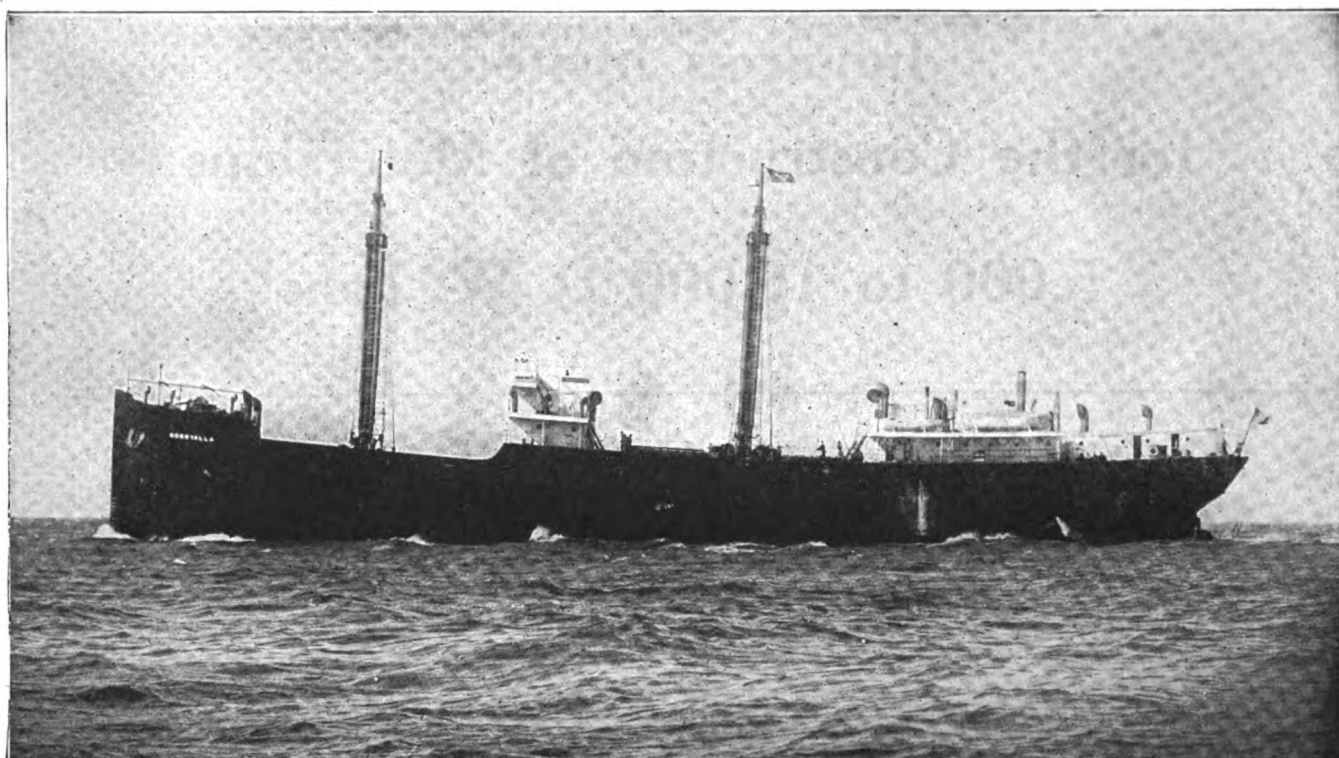
CHILBERG LINE,

per

J. C. Williams
Asst. Mgr.

CUNNINGHAM

AUXILIARY MACHINERY



(Copy of letter from owners appears on opposite page.)

Motorship "BOOBYALLA," one of five sister ships. Carries 4,400 tons d.w. 10 kts. Dimensions 269 ft. x 48 ft. x 27 ft. 1,000 b.h.p. McIntosh-Seymour Diesel Engines. All deck and engine room auxiliaries are ELECTRICALLY driven. All deck auxiliaries, steering gear and telemotor, main and auxiliary Diesel-electric generating units, control switchboard, etc., furnished by CUNNINGHAM.

OUR ELECTRIC ANCHOR WINDLASSES, CAPSTANS, CARGO WINCHES and STEERING GEARS are designed with a thorough knowledge of sea-going conditions. Which, combined with our six years' experience in the construction and observation of the operation of same, has resulted in the development of a line of MOTORSHIP EQUIPMENT second to none.

TWENTY-FOUR MOTORSHIPS, not including THREE STEEL MOTORSHIPS now under construction, depend upon CUNNINGHAM EQUIPMENT for despatch in handling cargo and efficiency and continuity of operation.

Full Information on Request.

ALLAN CUNNINGHAM COMPANY, Inc.

7500 Carleton Avenue

Seattle, U. S. A.

Eastern Distributors
MARITIME ENGINEERING & SALES CORP.

Main Offices:
NO. 2 RECTOR STREET, NEW YORK, N. Y.

San Francisco Representative:
GEO. E. SWETT
201 Rialto Bldg.
SAN FRANCISCO, CAL.

Merchant Shipbuilding Corporation

Chester, Pennsylvania, U.S.A.

Inquiries Invited
for the Construction of Motorships
5,000 to 15,000 D. W. Tons

Please Address all inquiries to
MERCHANT SHIPBUILDING CORPORATION
39 Broadway, New York

MARITIME ENGINEERING AND SALES CORPORATION **STEAMSHIP BROKERS**

Marine Machinery and Equipment Specialists

ELECTRICAL MARINE ENGINEERS

CONSULTING AND SUPERVISING ENGINEERS

in Connection with Manufacture and Installation of

—AUXILIARY MACHINERY

—DECK EQUIPMENT

—CARGO HANDLING GEAR

—DIESEL AND ELECTRIC PROPULSION

Investigations made and reports and specifications prepared and submitted by competent and experienced Marine and Electrical Engineers without cost to prospective customers. Installations Supervised.

Sole Eastern Distributors of ALLAN CUNNINGHAM

Electric and Steam Machinery and Equipment

CUNNINGHAM Electric Winches have been demonstrated to be SUPERIOR to winches of any other type in use in the RAPID AND SAFE HANDLING OF CARGO, ECONOMY IN OPERATION AND MAINTENANCE COSTS

RUGGEDLY CONSTRUCTED—WATERPROOF—"FOOLPROOF"

In addition to equipment now operating satisfactorily on Twenty-four (24) Motorships complete, ELECTRIC equipment for THREE (3) STEEL MOTORSHIPS now under construction, has been ordered.

MAIN OFFICES - 2 Rector St., NEW YORK

Telephone, Rector 2318

McINTOSH & SEYMOUR CORPORATION

AUBURN, N. Y., U. S. A.

Have Furnished Heavy-Duty Diesel Marine Engines
For the Following Ships

Name of Vessel	Dead Weight Tonnage
CETHANA - - -	3300
ISLA DE JAVA - - -	4100
CHALLAMBA - - -	3300
CULBURRA - - -	3300
COCHIN CHINA - - -	2500
BAYONNE - - -	1500
COOLCHA - - -	3300
SOLITARE - - -	5000
BENOWA - - -	4400
BALCATTa - - -	4400
BABINDA - - -	4400
BOOBYALLA - - -	4400
BORRIKA - - -	4400
MARYLAND - - -	4500
TEXACO No. 146 - - -	1000
TEXACO No. 147 - - -	1000
J. F. PENROSE - - -	4500
BRAMELL POINT - - -	5000
ASTMAHCO No. 3 - - -	3000
ASTMAHCO No. 4 - - -	3000
KAMCHATKA - - -	1500
BAKOI - - -	2500
CAROLYN FRANCES - - -	1500
DONNA LEE - - -	3300

LOOK UP THESE VESSELS WHEN THEY ARE
IN PORT



MAIN OFFICE AND WORKS
AUBURN, N. Y., U. S. A.

149 BROADWAY
New York City

815 SHELDON BLDG.
San Francisco, Calif.

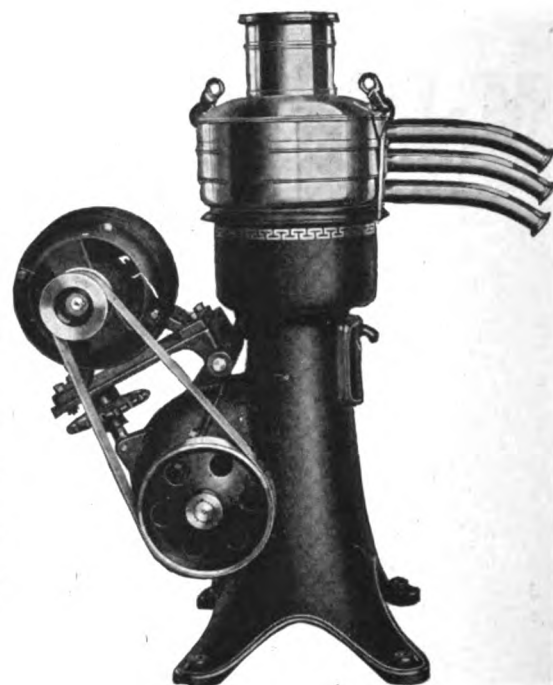
412 BISBEE BLDG.
Jacksonville, Fla.

700 INSTERSTATE BLDG.
Kansas City, Mo.

SUMPTER BLDG.
Dallas, Texas

Don't Pump Used Lubricating Oil Overboard

This wasteful practice has been discontinued on many ships. Uncle Sam's destroyer fleet, for instance, doesn't waste a drop of oil. And the example has been followed by many private ship owners.



De Laval Oil Purifiers

are rapidly coming into general use among ship owners and engineers who realize the necessity for reducing the consumption of oil.

They remove the water, dirt, grit, particles of metal and other impurities with which the oil becomes contaminated after a short time. After passing through the Purifier, the oil is returned to the lubricating system as good as new.

De Laval Oil Purifiers remove impurities by centrifugal force. This is the only positive method of purification which is in no way affected by the motion of the ship. It is the only method effecting absolute purification without waste of oil.

A De Laval Oil Purifier may be quickly and inexpensively installed on either an old ship or on one now building. It occupies less than two square feet of floor space; requires less than one horsepower to drive, and needs little attention when in operation.

*Write to nearest office for Crank Case Oil Bulletin No. 102,
and also for Marine Bulletin No. 103.*

THE DE LAVAL SEPARATOR COMPANY

Largest Manufacturers of Centrifugal Machinery in the World

165 Broadway, New York

29 East Madison St., Chicago

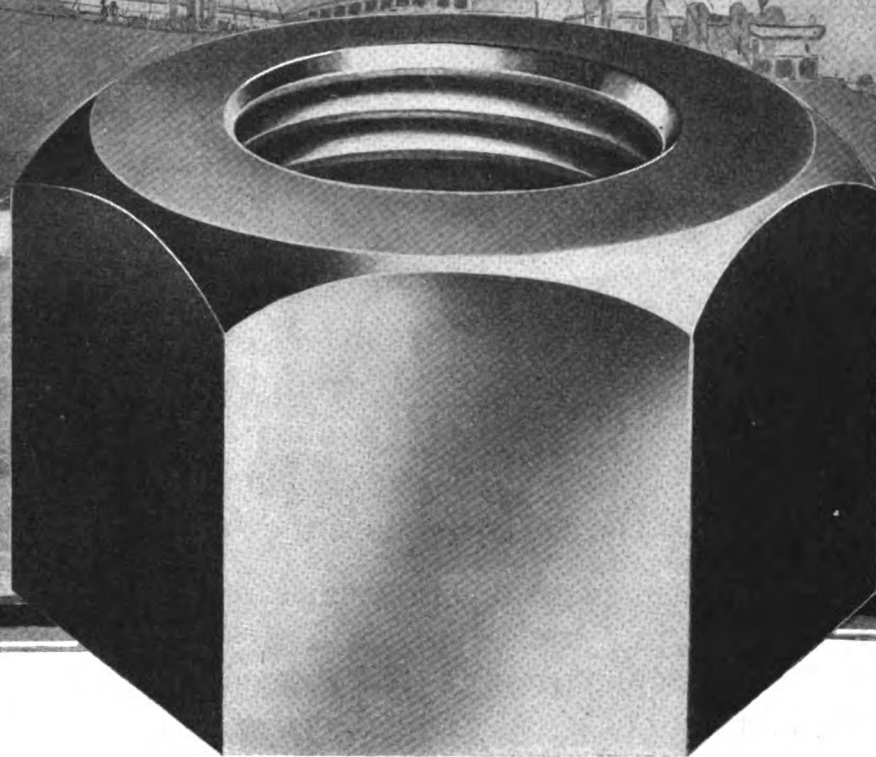
Manufacturers' Selling Agents

De Laval Dairy Supply Co., San Francisco, Cal.

Chadburn's (Ship) Telegraph Co., Ltd., Cypress Road, Bootle, Liverpool

Turbine Equipment Co., Toronto, Ontario, Canada

LARGE MILTON NUTS



for **MARINE ENGINES**
and **BOILERS**

Our extensive facilities for manufacturing big nuts ensures of prompt delivery.

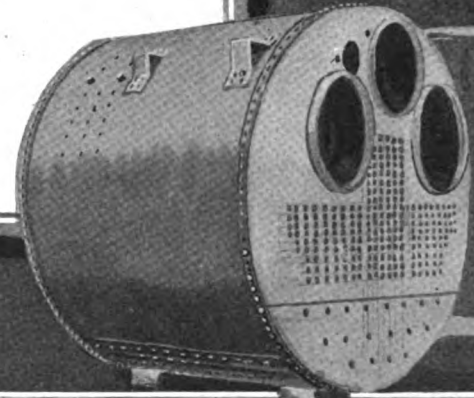
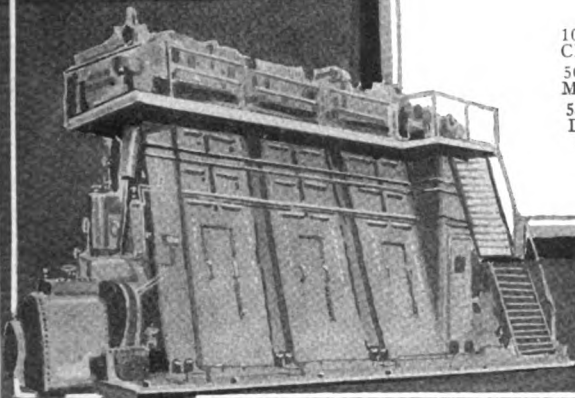
Not a Single Rejection Under Test

Correspondence solicited

The Milton Manufacturing Company
HOME OFFICE and FACTORY—MILTON, PA.

BRANCH OFFICES

10 S. LaSalle St., CHICAGO, ILL.	461 Market St., SAN FRANCISCO, CAL.	515 Hoge Building, SEATTLE, WASHINGTON
501 1st Wisconsin Nat. Bank, MILWAUKEE, WIS.		18 Bethune Ave., East, DETROIT, MICH.
534-536 Barclay Blk., DENVER, COLO.		748 Plymouth Bldg., MINNEAPOLIS, MINN.
193 So. Humphries St., ATLANTA, GA.		P. O. Box 332, TOLEDO, OHIO



Announcing the **MOTORSHIP YEAR BOOK**

The Manual of Motor-Shipping

To be issued during January, 1921



IRST and only complete Annual Blue Book covering the essential facts of the motorshipping industry, which will embrace the principal and important engineering facts and data as well as cataloguing the products of the principal manufacturers of engines and equipment used in the construction of motorships.

The most valuable and authoritative data yet compiled. It will contain complete information of every motorship that has been built from the first ship down to the present time. It will be used as a reference and guide for future construction and will be of inestimable value to the whole shipping industry.

You can readily see the importance of being represented in this catalogue section and are cordially invited to negotiate for the necessary space to fully present your connection with and position in the motorship field. Co-operation of Companies in the Industry is earnestly solicited. Rates upon application.

**Catalogue Forms Will Close About
December 30, 1920**

PRICE OF THE YEAR BOOK PER COPY

\$1.00

First Annual Review of Motor-Shipping

MILLER FREEMAN & COMPANY, *Publishers of* MOTORSHIP, 1270 BROADWAY, NEW YORK, U. S. A.

ROBERT HASLER AND **INCORPORATED**

STEAMSHIP AGENTS and BUNKER CONTRACTORS

We act as agents for the principal American Steamship Houses, and furnish highest grade "New River" and "Pocahontas" steam coal from selected mines.

COALING PIERS at Lambert's Point and Sewalls Point Norfolk,
and at Newport News

OFFICES

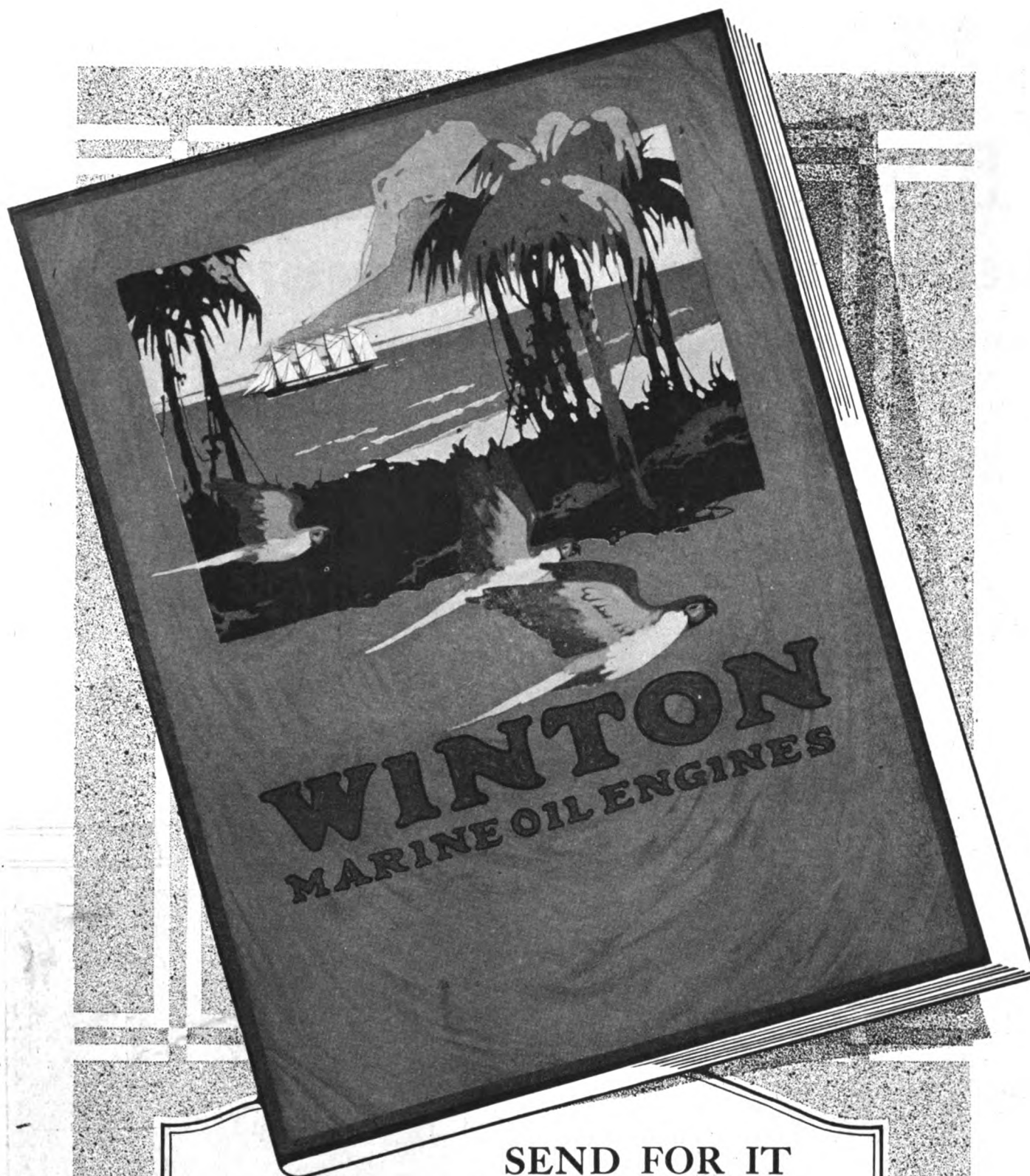
Board of Trade Building

Reyner Building

NORFOLK, VA. and NEWPORT NEWS, VA.



PHOTO COPYRIGHTED
View of New York Shipbuilding Corporation Plant taken from an Aeroplane 1000 feet in the Air July 24, 1919
THE NEW YORK SHIPBUILDING CORPORATION
MAIN OFFICE AND WORKS
CAMDEN, NEW JERSEY



SEND FOR IT

The new Winton Oil Engine Catalog will be sent to any naval architect, ship builder or ship owner who requests it on his own letter head. We want every buyer of oil engines to have one.

WINTON ENGINE WORKS,

New York—A. G. Griesse, 120 Broadway

Seattle—H. W. Starrett, Sunset Engine Co.

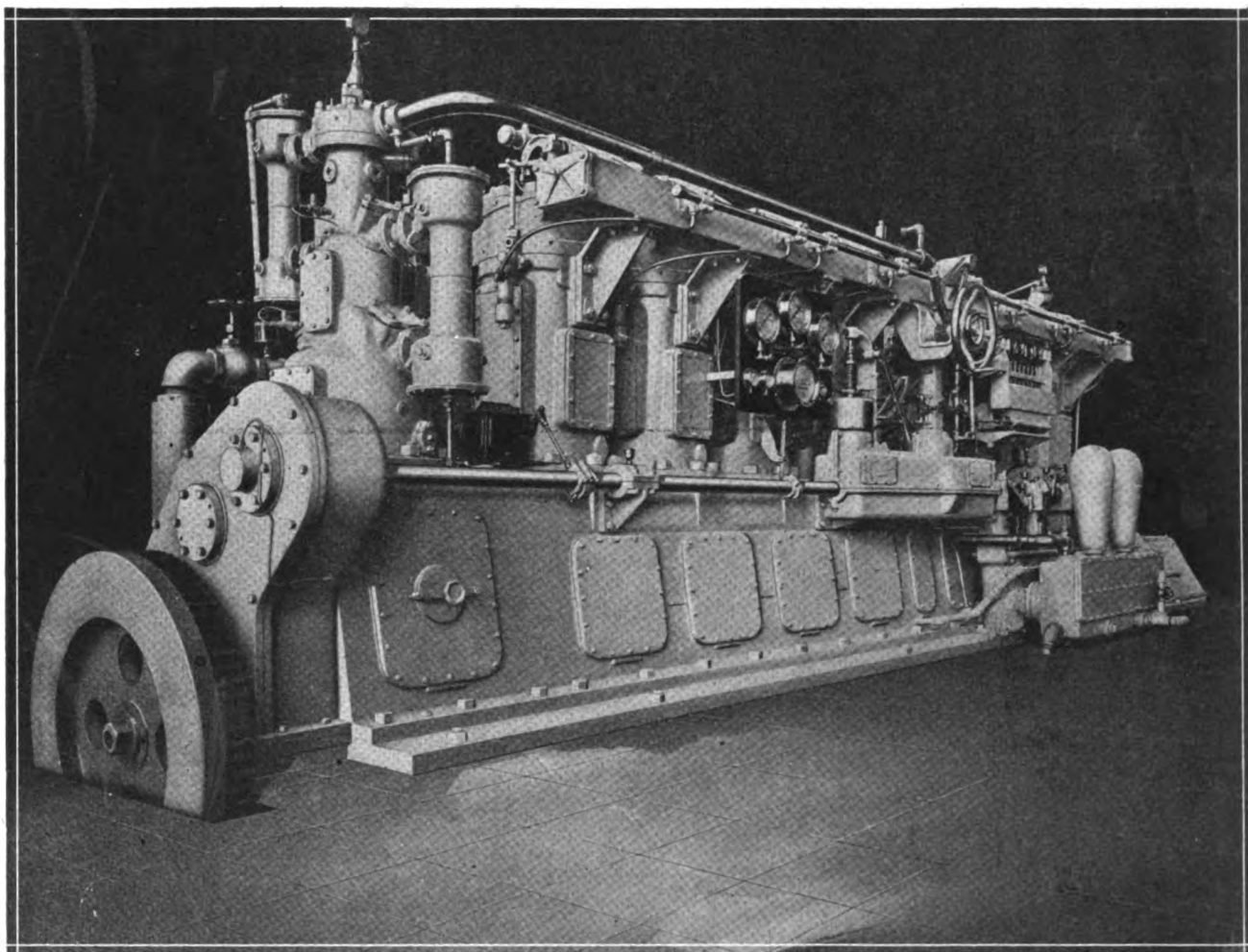
Winton

OIL DIESEL TYPE ENGINES

WINTON Oil Engines are built in four sizes and in power ranges from 125 to 450 H. P. Of the full Diesel type, these engines are distinctly and thoroughly American, substantial, highly developed, a finished product in every detail.

WINTON OIL ENGINES
are manufactured in the following sizes:

Model	Bore	Stroke	Power	No. Cylinders
54	7½"	11"	125 H. P.	Six
35	11"	14"	225 H. P.	Six
24	13"	18"	300 H. P.	Six
40	13"	18"	450 H. P.	Eight



CLEVELAND, OHIO, U. S. A.

San Francisco—F. G. Bryant, 424 Ellis Street

Jacksonville—D. J. Carrison & Co.

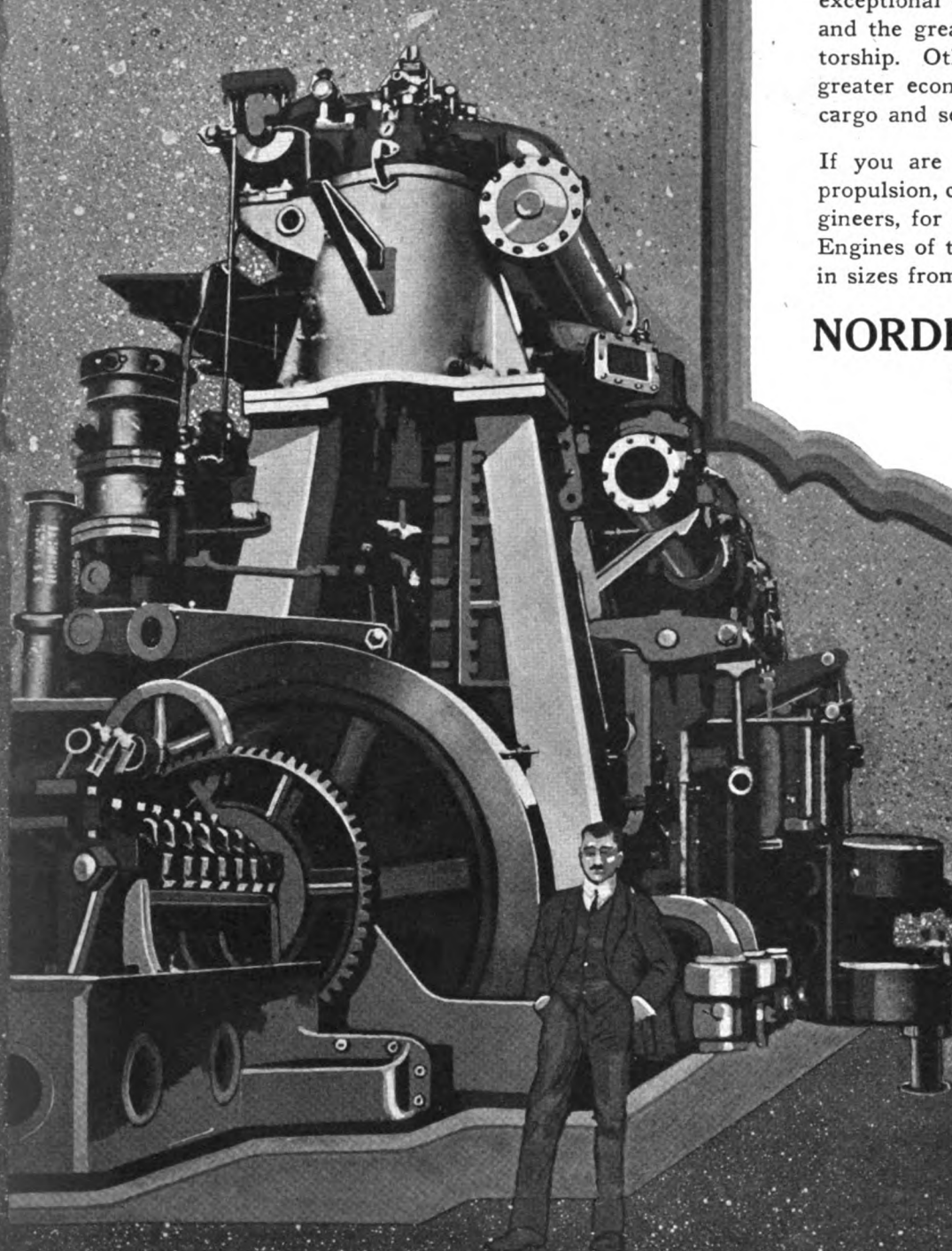
©1920, Rex W. Wadman, Inc.

Paying Larger Dividends

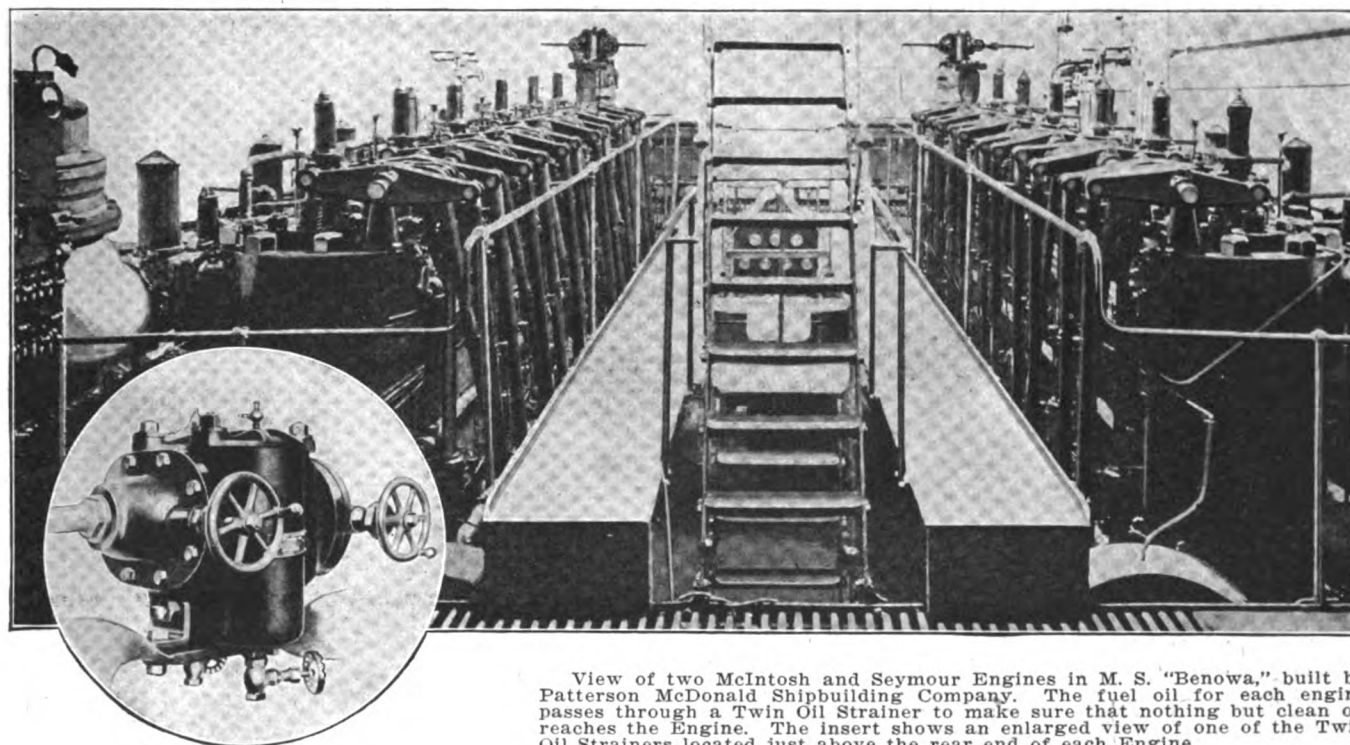
IT has been authoritatively shown that the motorship will produce a greater net return on investment than the steamship even though the investment is somewhat larger for the motorship. The increase in net return becomes larger as the length of voyage is increased. This is due primarily to the exceptional economy of the Diesel Engine, and the greater cruising radius of the motorship. Other comparisons emphasize the greater economy of the Diesel Engine for cargo and semi-cargo ship propulsion.

If you are interested in economical ship propulsion, communicate with Nordberg engineers, for Nordberg builds Marine Diesel Engines of the slow speed heavy duty type in sizes from 300 to 3000 b.h.p.

NORDBERG MFG. CO.
MILWAUKEE
WIS.



NORDBERG MARINE DIESEL ENGINES



View of two McIntosh and Seymour Engines in M. S. "Benowa," built by Patterson McDonald Shipbuilding Company. The fuel oil for each engine passes through a Twin Oil Strainer to make sure that nothing but clean oil reaches the Engine. The insert shows an enlarged view of one of the Twin Oil Strainers located just above the rear end of each Engine.

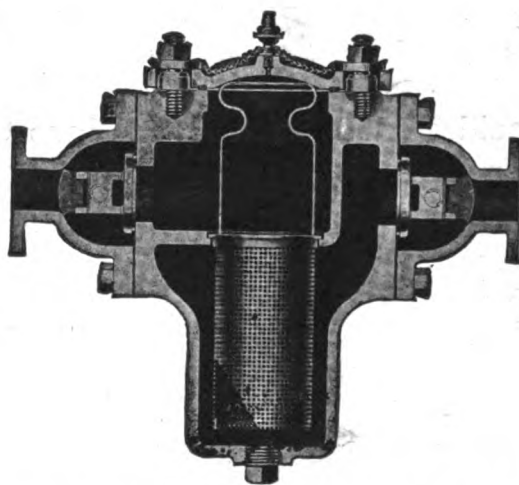
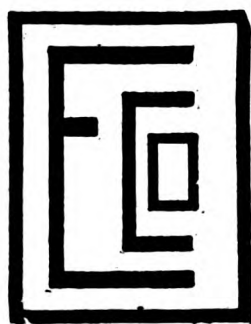
STRAIN Your Oil

Use Twin Oil Strainers and insure a continuous supply of clean oil. Sizes range from 1 to 5 inch. (2½ inch and larger sizes have flanged connections.) Basket mesh 1/64 inch or larger. Complete information in bulletin "AA" which will be sent on request.

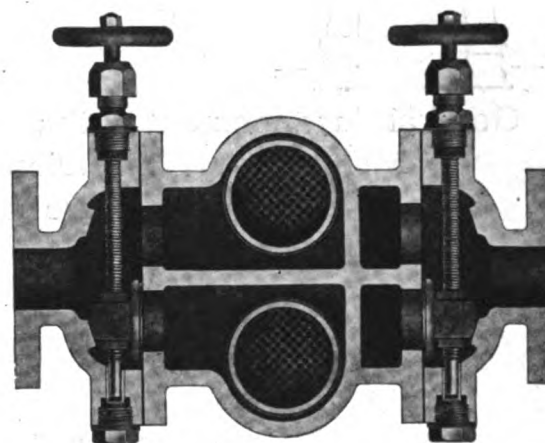
Fuel oils contain some solid matter which must be removed from them before they can be used with any degree of satisfaction either in an oil engine or in a burner under the boiler. To do this it is necessary to use some kind of strainer that can be cleaned without shutting off the supply.

The Twin Oil Strainer

gives the same service as two single strainers, but it is more convenient to operate, requires less space for installation and does away with extra valves and piping necessary to connect up. These are the features that lead to its being used in submarines and destroyers for the United States Navy, and in cargo boats for the United States Merchant Marine.



The oil enters the strainer at the left and empties into and passes through the straining basket, then up and out at the right. All solid impurities are retained in the straining basket.



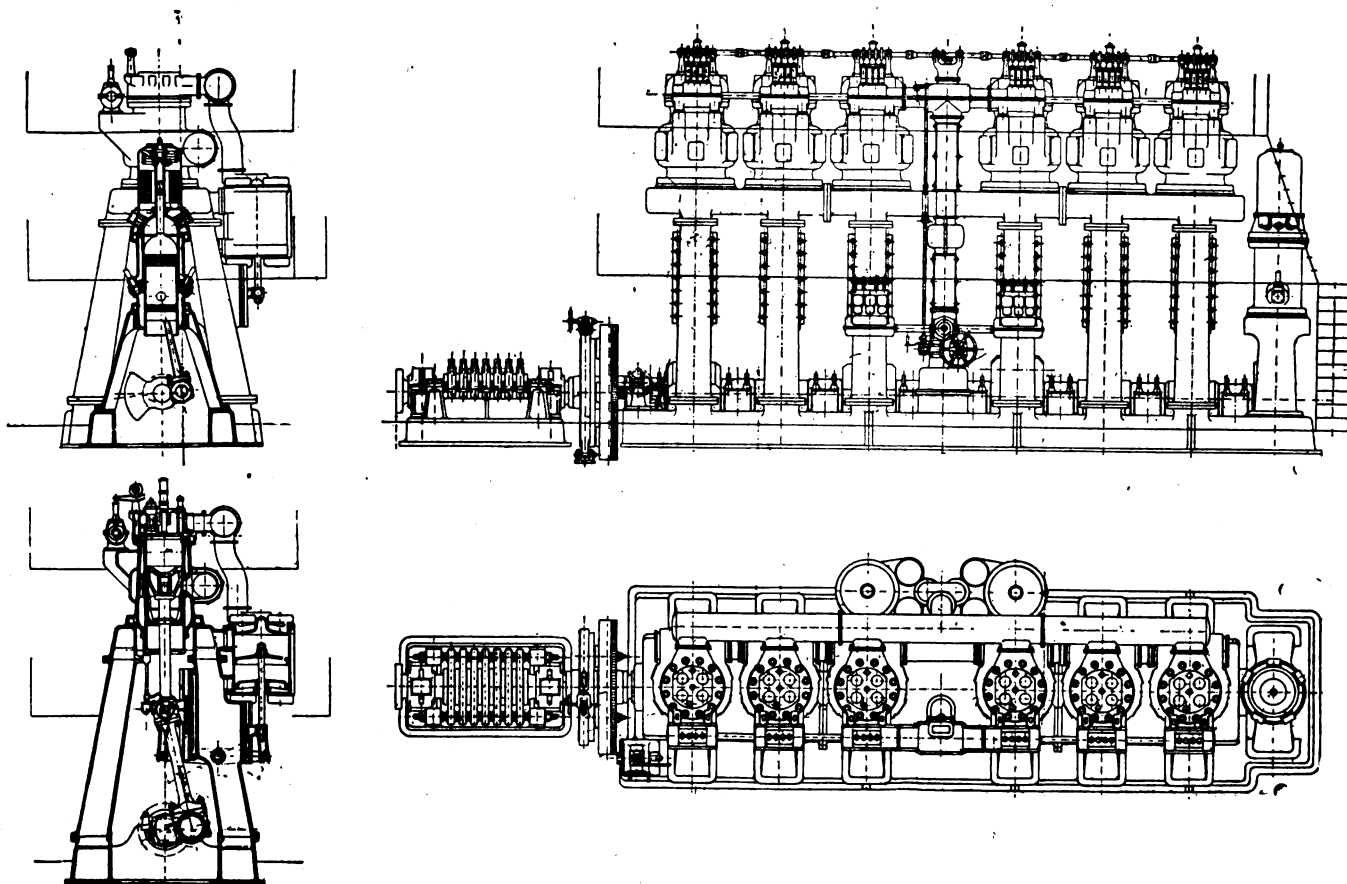
When a basket is clogged, the valves are shifted to direct the flow of oil into the clean basket, which is in reserve. The compartment containing the dirty basket is then opened up, the basket removed, cleaned and replaced, and held in reserve until the basket then in service needs cleaning.

ELLIOTT COMPANY, 431 Grant St., Pittsburgh, Pa.

SCHNEIDER & C^{IE}

HEAD OFFICE
42, RUE D'ANJOU, PARIS, FRANCE

NEW YORK OFFICE
21 EAST 40th STREET



General Arrangement of the Schneider 1500 Shaft H. P. Two-Cycle Type Merchant-Marine Diesel Engine. A number of these Sets are under construction.

SUCCESS in construction of high grade machinery relies mostly on judicious selection of materials used. Schneider et Cie are foremost leaders in engineering and metallurgy.

SCHNEIDER et Cie are the largest Engineering Concern in France, and one of the greatest in the World. Back of their Diesel Engines is the Schneider reputation one century old.

MARINE ENGINES

FOR over 15 years Schneider et Cie have been engaged in the construction of Marine Diesel Engines.

FOR a considerably greater number of years they have been builders of marine steam-engines for freighters and for warships of many Navies.

THEIR experience as shipbuilders and marine engineers has been invaluable in their development of the Diesel engine in both 4-cycle and 2-cycle types.

THEY have now adopted the 2-stroke cycle for engines of large power which have been built up to 1500 bhp, both in the slow-speed crosshead type as well as in the high-speed submarine type, and they are prepared to construct up to 3500 shaft H. P. per engine, or 7000 shaft H. P. per twin-screw set for merchant ships.

Applications for American Licenses and for quotations on Engines should be made to

**FRAMERICAN INDUSTRIAL DEVELOPMENT
CORPORATION**

21 EAST 40th STREET, NEW YORK

Exclusive Representative

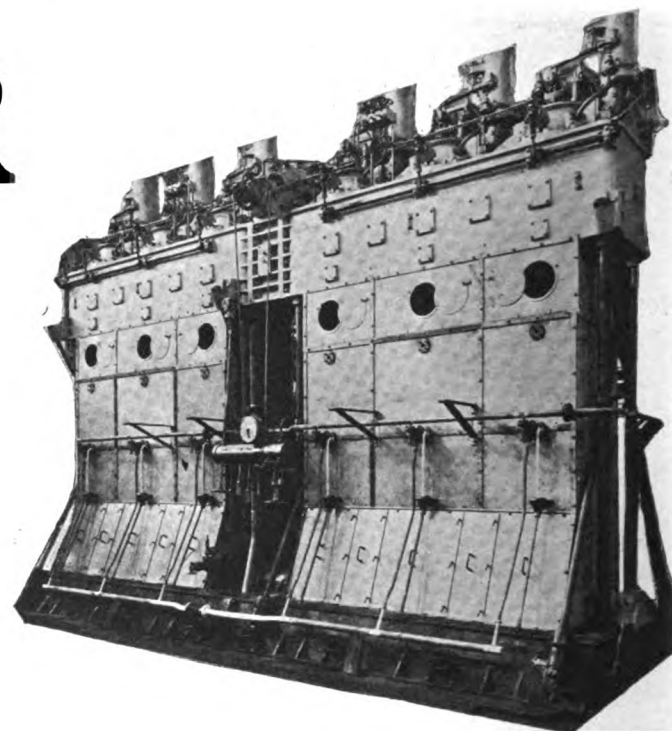


DIESEL ENGINES

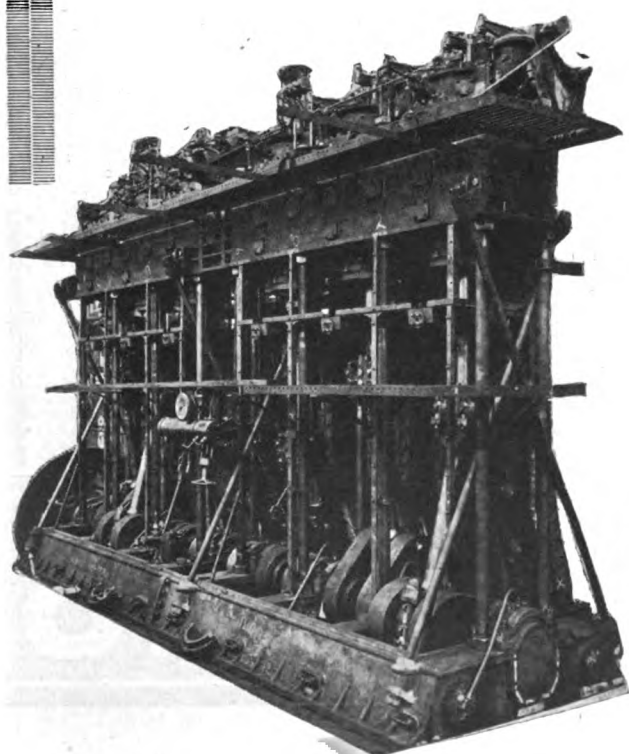
WERKSPoor

(Four-Cycle Type)

MARINE DIESEL ENGINES



The fourth license for
the building of Werks-
poor Marine Diesel
Engines in the United
States East of the Rocky
Mountains is available



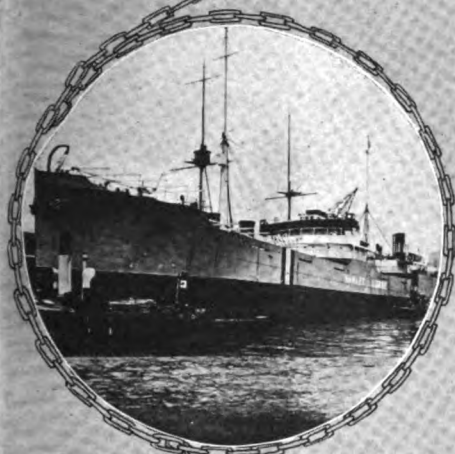
For information apply to

*WILLIAM BRAAT, 730 Tribune Building,
154 Nassau Street, New York City, U. S. A.*

United States agent for

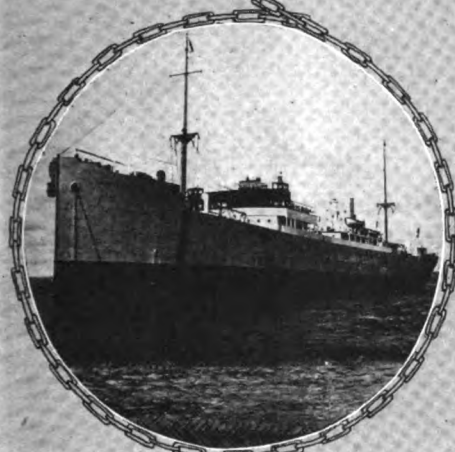
**WERKSPoor ENGINEERING WORKS,
AMSTERDAM, HOLLAND**

GÖTAVERKEN

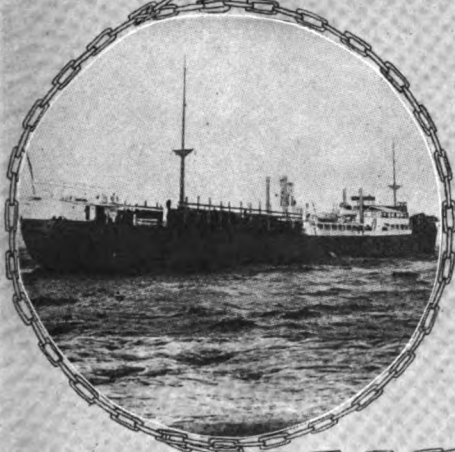


M.S. "Hamlet"

6,800 tons d.w.



M.S. "Bullaren"

9,400 tons d.w.
4,000 I.H.P.

M.S. "Tisnaren"

9,400 tons d.w.
4,000 I.H.P.

SHIPBUILDERS

Builders of

DIESEL-MOTORS

List of Diesel-motored vessels built since 1916:

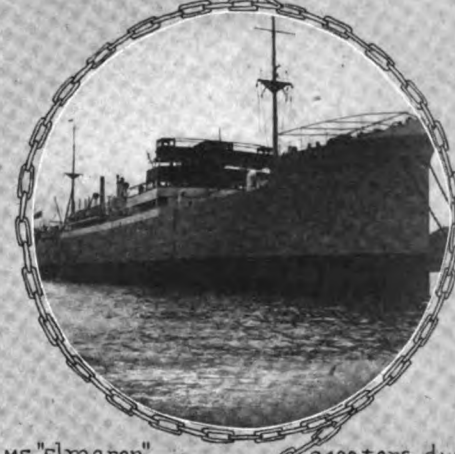
Hamlet	6,800 tons D.W.	3,200 I.H.P.
Bullaren	9,400 " "	4,000 " "
Tisnaren	9,400 " "	4,000 " "
Balboa	9,300 " "	3,100 " "
Stureholm	7,800 " "	2,600 " "
Buenos Aires	9,300 " "	3,100 " "
Elmaren	9,400 " "	4,000 " "

IF your motorships need repairs when in European waters, send them to our yard in preference to a plant that has had little or no experience with the construction of high-powered Diesel-motorships. Our foundry can supply Diesel-engine castings to order.

Floating Dry-Dock with a lifting-capacity of 12,000 tons.

AKTIEBOLAGET
GÖTAVERKEN

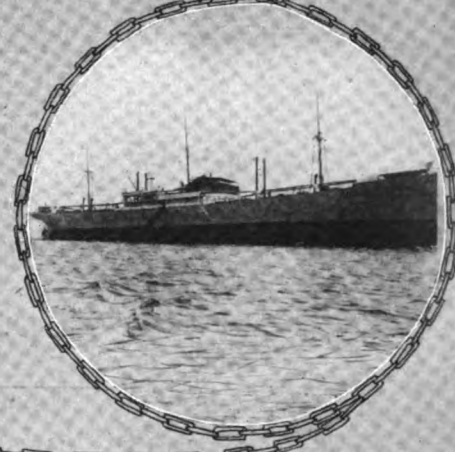
Göteborg, Sweden
Telegrams: Götaverken, Gothenburg



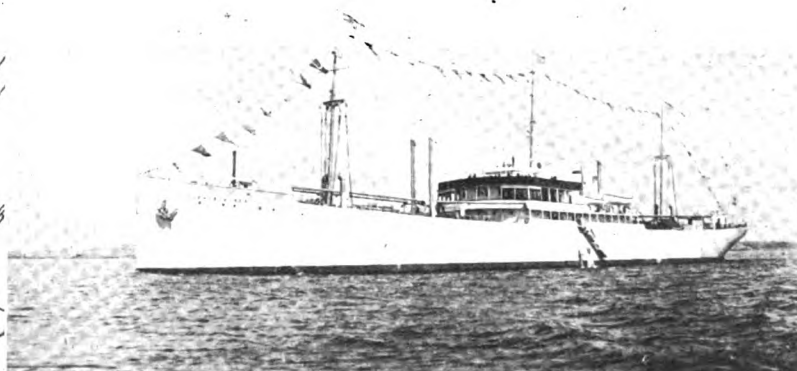
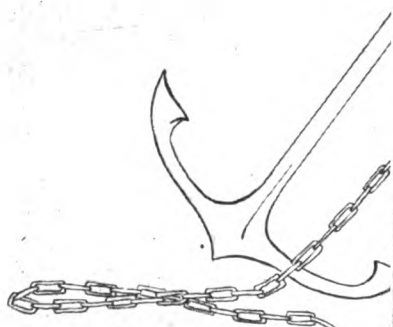
M.S. "Elmaren"

9,400 tons d.w.
4,000 I.H.P.

M.S. "Stureholm"

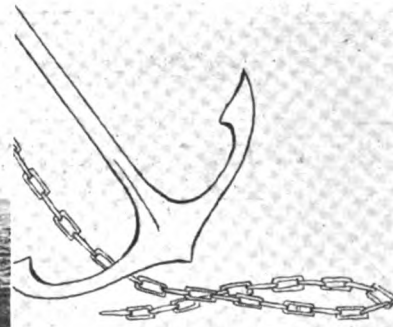
7,800 tons d.w.
2,950 I.H.P.

M.S. "Balboa"

9,300 tons d.w.
3,100 I.H.P.

M.S. "Buenos Aires"

9,300 tons d.w. 3,100 I.H.P.



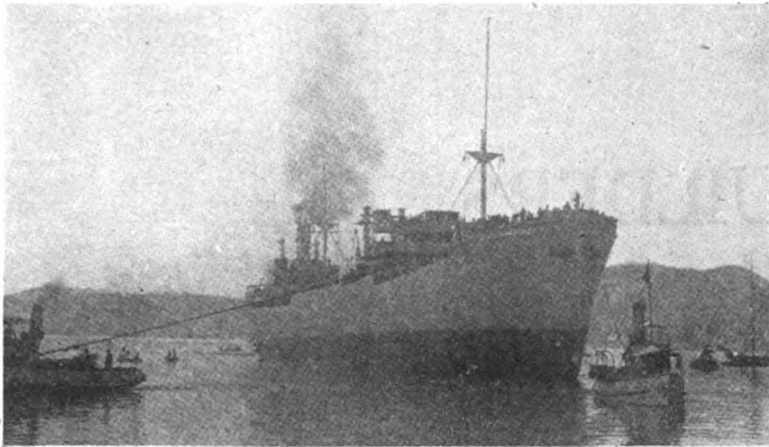
SHARE CAPITAL
100 MILLIONS OF LIRE

ANSALDO-SAN GIORGIO

(LIMITED)

Ex Flat - San Giorgio

Shipyards Muggiano (Spezia)
Offices and Engine Works Turin Via Cuneo 20 Italy



Motor-Ship with two propellers and two
reversible Diesel-Engines.

Shipbuilders and Engineers

Construction of Cargo-Boats up
to 12,000 Tons d. w. Capacity

FOR

The Italian Emergency Fleet

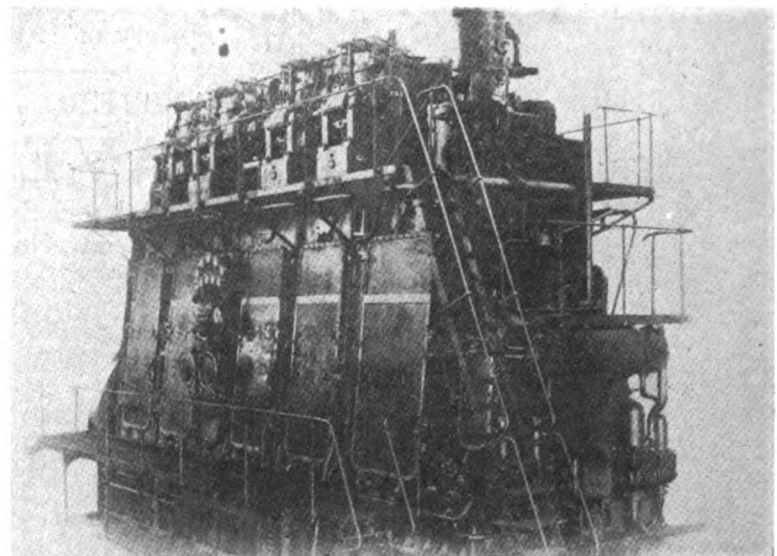
Standardized Diesel-Engined

Motorships of 8,100; 9,000; 12,000 and 15,000 tons d. w. c. now
Building at Muggiano-Spezia

Two-Cycle Diesel-Ship Engines of 4,000 b. h. p.
Per Shaft

More Than 300 Engines
200,000 b. h. p. Constructed

Submersibles
Torpedo-Boats

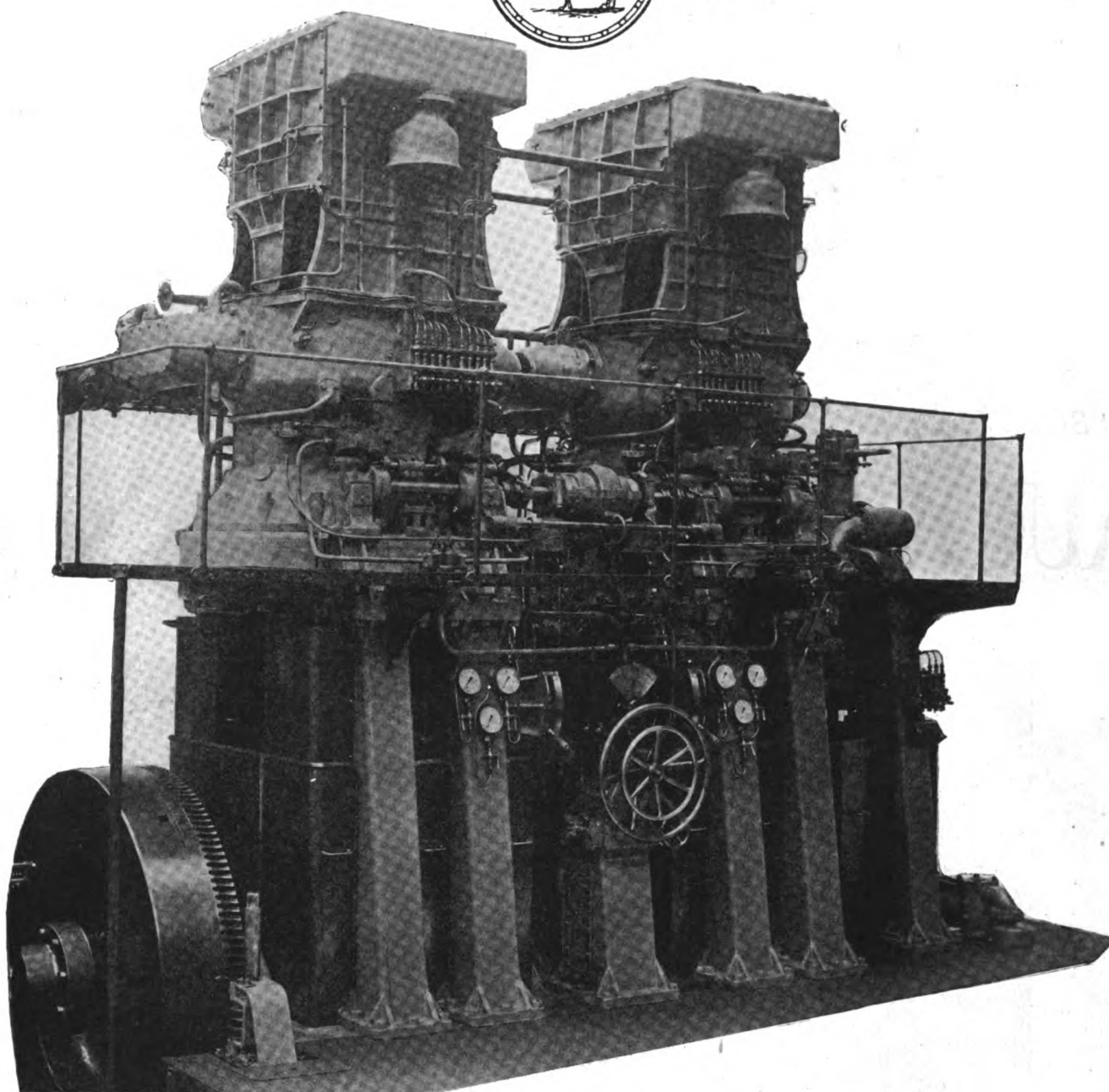


One of the Two Marine Diesel-Engines for the Motorship
Ansaldo-San Giorgio III.

“Diesel” Engines for Industrial and
Maritime Services

CAMMELL LAIRD & CO. LTD.

BIRKENHEAD



MARINE OIL-ENGINES

(CAMMELLAIRD—FULLAGAR SYSTEM)

for all Classes of Merchant Vessels

ADVANTAGES CLAIMED

50% more Power in same space over other engines

Low Revolutions and High Propeller Efficiency

Even Turning Moment and Perfect Balance

No direct stresses on framing as Piston Loads are Balance

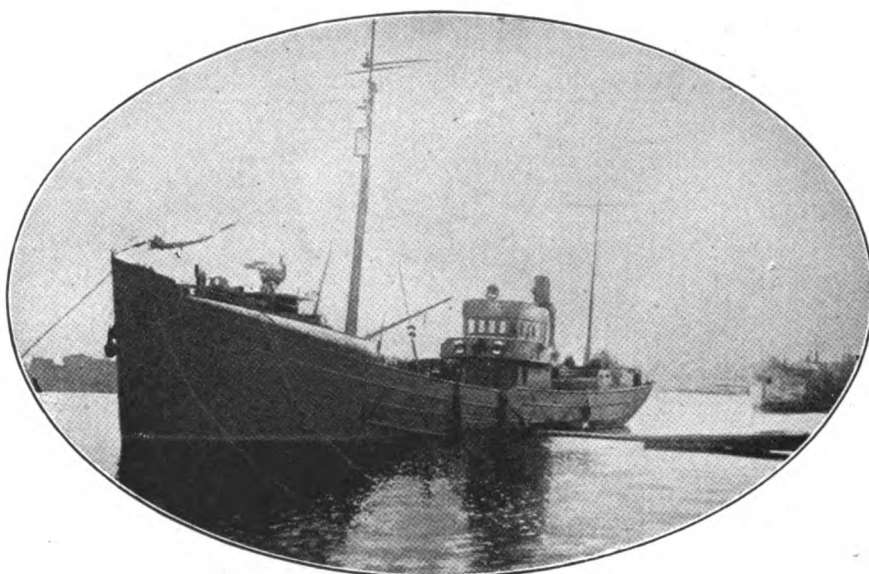
Loads on all pins Reversible, Ensuring Efficient Lubrication

Only one Working Valve per Cylinder. No Vibration

LONDON

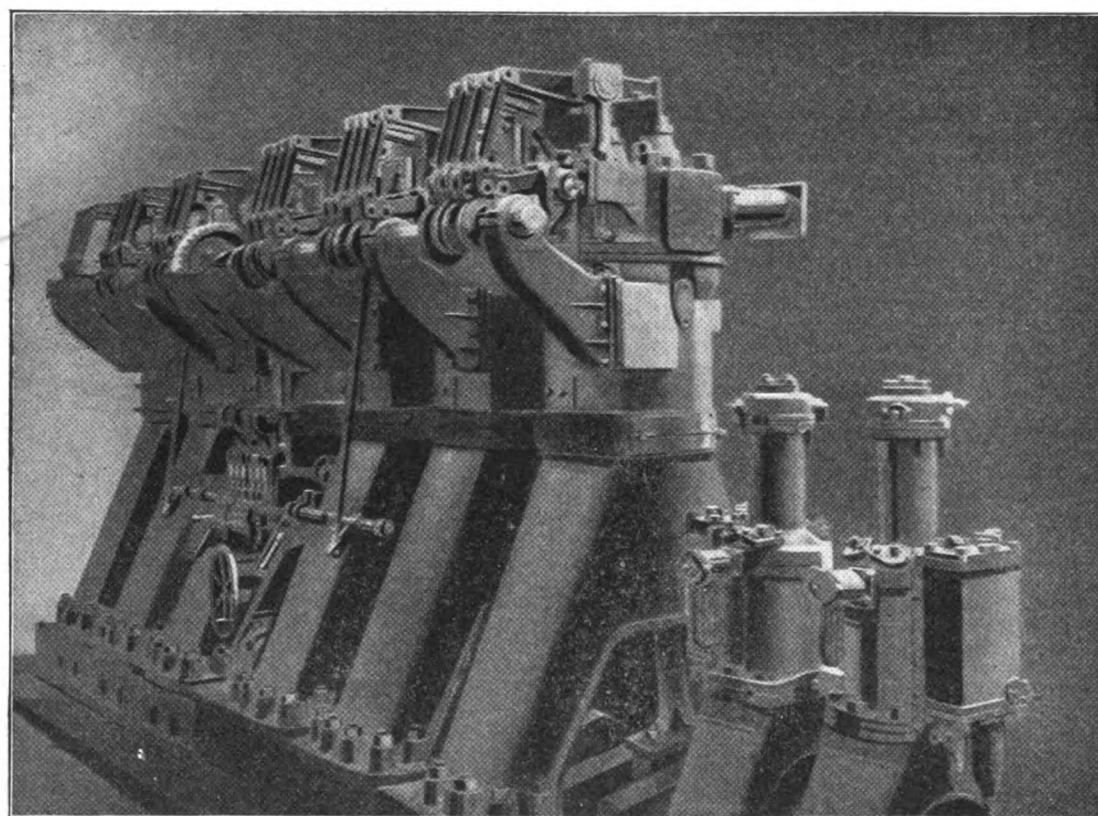
3 CENTRAL BUILDINGS, WESTMINSTER, S.W.1.

67, RUE DU
PERREY



LE HAVRE
(FRANCE)

SOCIÉTÉ ANONYME DES CHANTIERS & ATELIERS
AUGUSTIN NORMAND



D I E S E L E N G I N E S

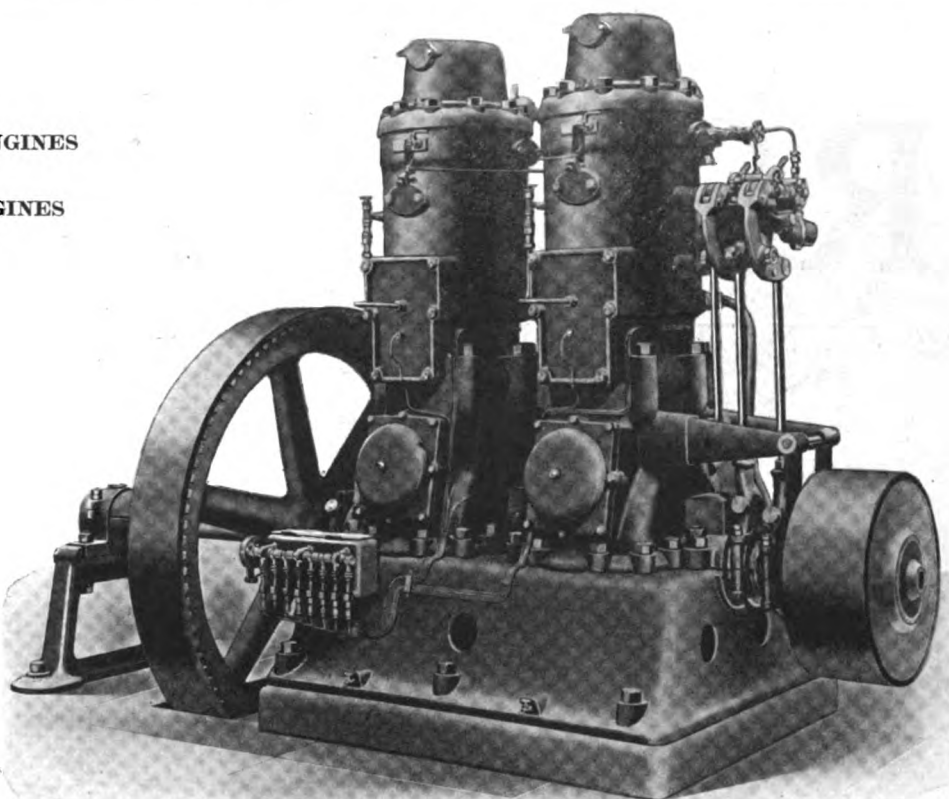
DRAEGER.

BOLINDERS

SINGLE CYLINDER ENGINES
15-40 B. H. P.

TWO CYLINDER ENGINES
50-160 B. H. P.

Complete
MOTOR WINCHES
PUMPING SETS
LIGHTING SETS



Two Cylinder Bolinders Heavy Oil Engine, Mod. H.

Reduced Operating Costs

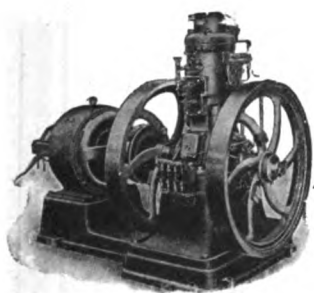
will be attained by using

BOLINDERS STATIONARY ENGINES

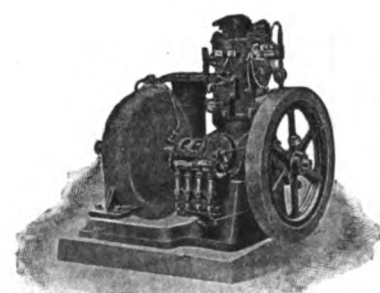
as auxiliary power on board your ship

THEY ARE ALREADY IN OPERATION ON HUNDREDS OF VESSELS AS POWER FOR:

ELECTRIC STEERING GEARS
REFRIGERATING PLANTS
ELECTRIC LIGHTING
ELECTRIC HEATING
CARGO PUMPS
COMPRESSORS
BILGE PUMPS
CAPSTANS
WINCHES



Electric Lighting Set



Centrifugal Pumping Set

Operating costs are going up. Freight rates are going down. The auxiliary machinery might save your margin of profit. Let us place the facts before you. Our Technical Department is always at your service.

BOLINDERS COMPANY, 30 Church St., New York City

COMPANIA BOLINDER
560 Avenida Mayo
BUENOS AIRES, ARGENTINA

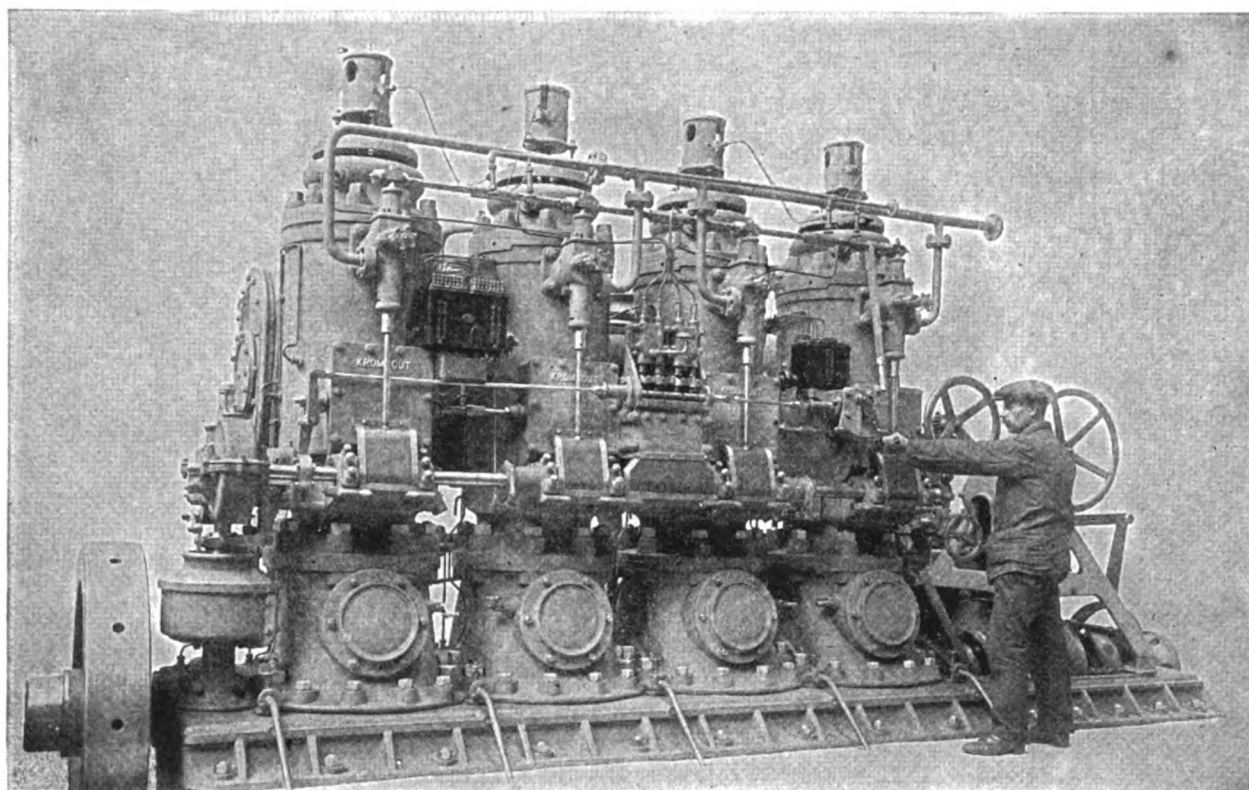
REPRESENTATIVES:
HENRY LUND & CO.
Marine Building
SAN FRANCISCO, CAL.
LOMBARD & CO.
9 O'Reilly
HAVANA, CUBA

SWEDISH STEEL & IMPORTING CO
Shaughnessy Building
MONTREAL, CANADA



FOR FIFTEEN YEARS THE KROMHOUT

HAS BEEN THE LEADING MARINE OIL-ENGINE
OF EUROPE



A 320 Shaft Horse-Power KROMHOUT Direct-Reversible Marine Heavy-Oil Engine

WE NOW ARE PREPARED TO DELIVER MARINE AND STATIONARY
KROMHOUT ENGINES IN THE UNITED STATES OF AMERICA
FROM 8 B. H. P. TO 320 B. H. P.

PROSPECTIVE AGENTS ARE DESIRED TO COMMUNICATE WITH US
WITHOUT DELAY

D. GOEDKOOP, JR.

KROMHOUT MOTOR WORKS

AMSTERDAM, HOLLAND



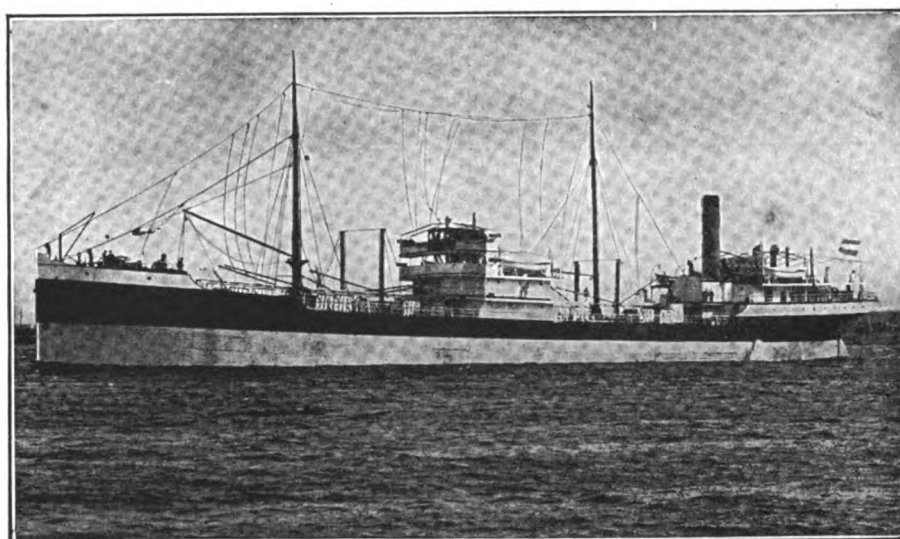
OIL FUEL

THE FUEL OF THE 20th CENTURY

Efficiency

Economy

Cleanliness



The Asiatic Petroleum Co., Ltd.

ST. HELEN'S COURT, GREAT ST. HELEN'S, LONDON, E. C. 3

Can arrange Supplies of OIL FUEL BUNKERS at—

Adelaide
Alexandria
Amsterdam
Antwerp
Avonmouth
Augusta (Sicily)
Barton (Manchester Ship Canal)
Balbao (Panama Canal)
Balik Pappan
Bangkok
Batavia
Boelebaai Ceram
Bombay
Buenos Ayres
Calcutta

Canton
Cape Town
Christiania (Soon)
Colombo
Colon (Panama Canal)
Curacao
Gemsah
Glasgow
Hankow
Hong Kong
Hull
Hurghada
Karachi
La Guayra (Venezuela)
Las Palmas
Liverpool

Lisbon
London (Shell Haven)
Macassar
Maracaibo (Venezuela)
Manilla
Malmo
Malta
Mombasa
Madras
Melbourne
Montreal
Nagasaki
New York
New Orleans
Palembang
Pangkalan Berandan

Penang
Portland (Ore.)
Port Said
Pulo Bukom
Puloe Samboe
Rotterdam
Rouen
Rio de Janeiro
Sabang
Saitozaki
Salina Cruz (Pacific)
San Francisco
San Pedro
Santos
Seattle (Washington)

Shanghai
Singapore
Soerabaya
Stockholm
Suez
Sydney
St. Thomas (W. I.)
Svolvaer
Tampico
Tarakan
Trinidad
Tuxpan
Vancouver
Vera Cruz
Yokohama

And New Stations will be ready very shortly at—

Barcelona
Bilbao
Bordeaux
Cebu
Constantinople

Copenhagen
Dunkirk
Funchal (Madeira)
Genoa
Gibraltar

Gothenburg
Granton
Havre
Ilo Ilo
Marseilles

Montevideo
Perim
Pernambuco
Piraeus
Port Louis

Port Soudan
Port St. Louis Du Rhone
Southampton
Spezzia
St. Vincent
St. Nazaire

BUYERS desiring information regarding supplies of and price for Oil Fuel for use in Internal-combustion Engines or for other purposes should apply to **The Asiatic Petroleum Company (New York), Limited, 233 Broadway, New York, N. Y., U. S. A.; The Shell Company, of California, Security Building, 343 Sansome Street, San Francisco, Cal., U. S. A.,** or at the above address.

THE Asiatic Petroleum Company also supply **Kerosene Oil** for use in the smaller Internal-combustion Engines and are prepared to supply **Petroleum Spirits, Lubricating Oils, Wax and Greases** in all Far Eastern Markets.

CRAMP



The world's record for a round trip from New York to Brest and return was established by the *Great Northern*—a turbine driven express steamer, *The propellers on the Great Northern are the famous Cramp machined type—perfect driving surfaces, absolutely smooth and every blade of specified thickness at all points as designed.*

On all vessels, as in the case of the *Great Northern*, in which maximum speed with least expenditure of horse power and the greatest economy of fuel are to be attained, the propeller should have all the qualities of pitch accuracy, smoothness of surface and designed thickness of blade.

These results are obtained only by the use of the Glocker Propeller Blade Facing Machine, a special patented machine owned by the Cramp Company and operated only in the Cramp Company's shops.

One of these machines is shown here. With it the driving faces of the propeller are machined to a true helical surface and by a special attachment the backs of the blades are machined to the exact required thickness. During the War this machine in the Cramp Shop machined over 500 propellers for Cramp built ships and for vessels built by other ship-builders all over the United States.

THE WM. CRAMP & SONS SHIP & ENGINE BUILDING CO., PHILADELPHIA



Electrified!

By supplanting steam power with that ever-amazing force — electricity — the United States Navy has revolutionized warship propulsion and design.

The superiority of the Tennessee, the latest great sea warrior to fly the Stars and Stripes, lies not so much in the weight of her guns and armor as in the all-around efficiency as a fighting craft which electric drive has largely made possible.

In this epochal change from steam to

electricity, Westinghouse has given the Navy all the aid that its long electrical experience has made possible.

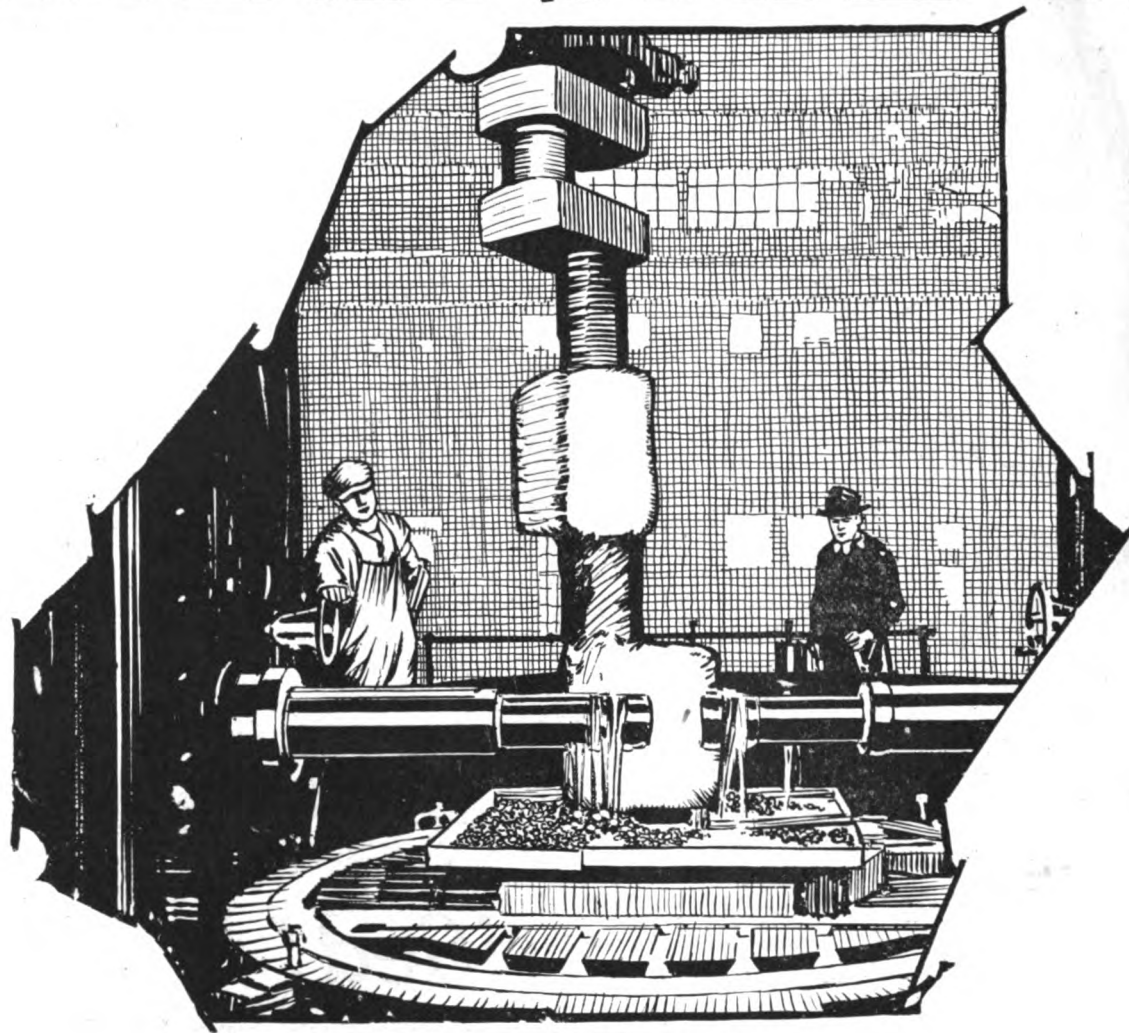
Besides electrifying the 32,000 horsepower Tennessee, Westinghouse is now building electrical equipment for two more battleships of her class, four mightier men-o'-war and two fast battle-cruisers.

WESTINGHOUSE
ELECTRIC & MANUFACTURING COMPANY
East Pittsburgh, Pa.

Westinghouse

ELECTRICAL EQUIPMENT FOR MARINE SERVICE

MIDVALE CRANK SHAFTS



ROUGHING OUT CRANK SHAFT

MIDVALE CRANK SHAFTS in sizes 7 inches and larger are now being made on new machines specially designed for this class of work. Superior accuracy of alignment and prompt delivery are insured by the use of this equipment.

MIDVALE STEEL AND ORDNANCE COMPANY CAMBRIA STEEL COMPANY

General Sales Office:
WIDENER BUILDING, PHILADELPHIA, PA.

District Sales Offices:
Atlanta, Boston, Chicago, Cincinnati, Cleveland, Detroit, New York, Philadelphia, Pittsburgh, San Francisco, Salt Lake City, Seattle, St. Louis.

Sole Export Representative:
CONSOLIDATED STEEL CORPORATION, 165 Broadway, New York
All export inquiries should be sent to this address

Series No. 4-N

MIDVALE

CAMBRIA

Post's Motor Marine Metal

Specified by leading naval architects and steamship owners for all bearings of Diesel type engines.

STANDARD
in the largest
SHIP YARDS

We
guarantee
our metals
to be made
100% of virgin
raw materials of
the highest grades
at all times

The ideal babbitt-metal
for heavy pressure bearings, crank pins, slides and thrust bearings in all types of marine engines

E. L. Post & Company, Inc.

SOLE MANUFACTURERS

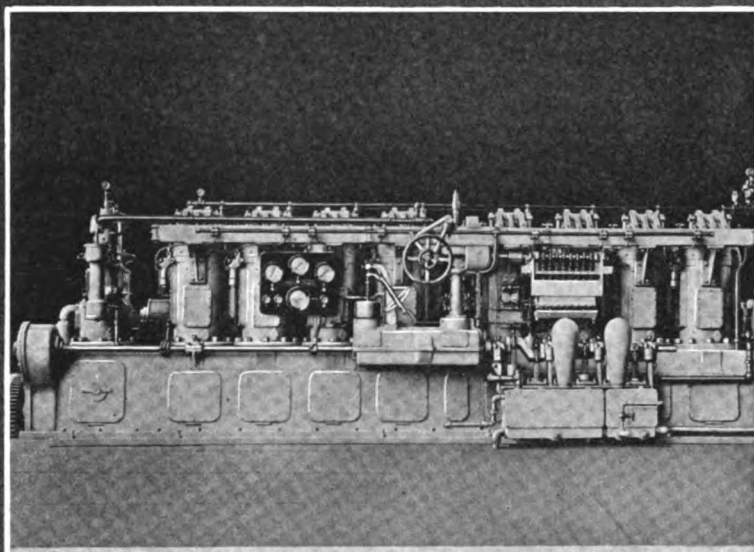
50 Cliff Street
NEW YORK CITY

We shall be pleased to furnish responsible companies with a list of our marine customers

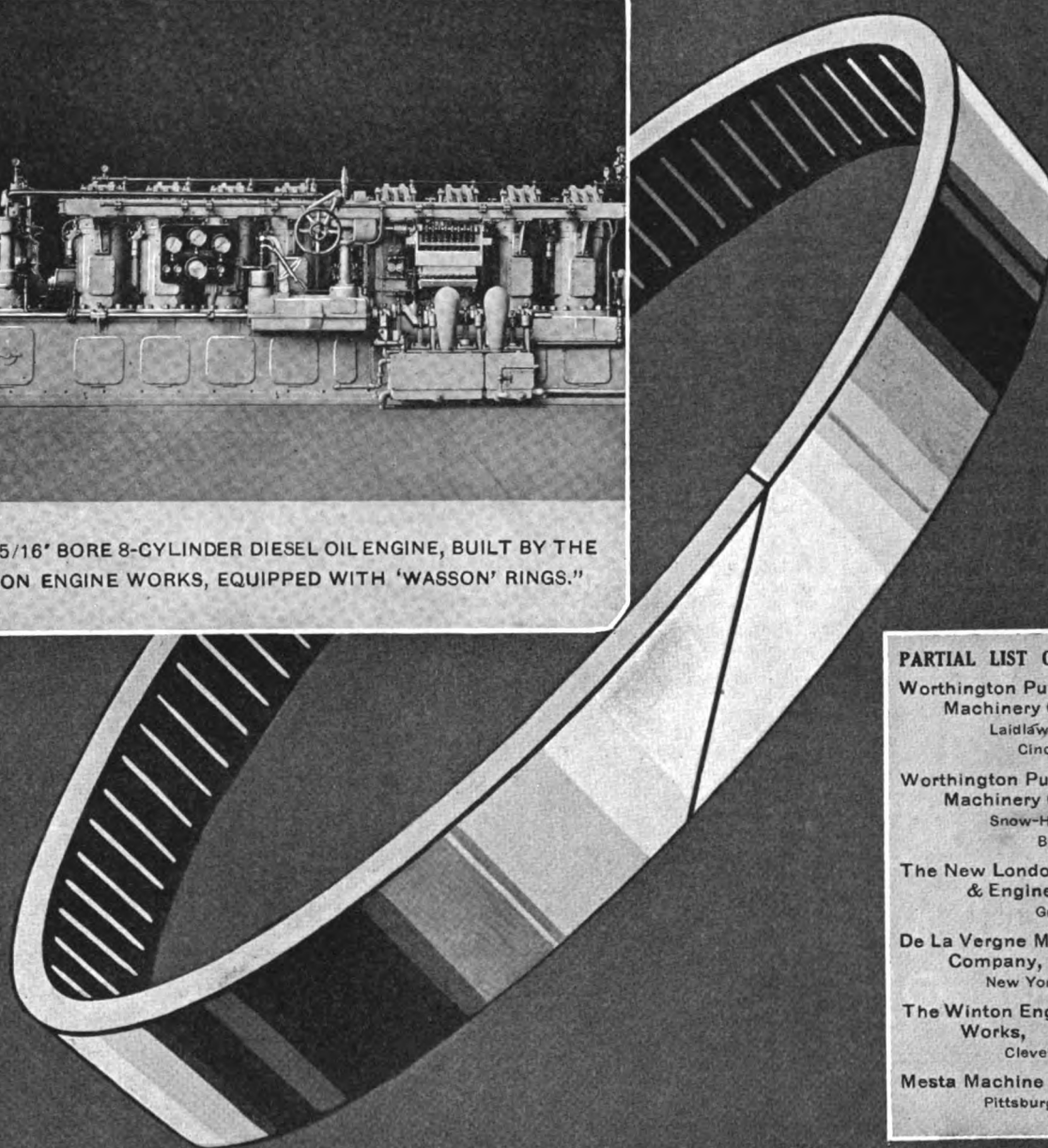
WASSON

CONCENTRIC PEENED PISTON RINGS

The most efficient type
of piston ring for Diesel Engines



"12-15/16" BORE 8-CYLINDER DIESEL OIL ENGINE, BUILT BY THE WINTON ENGINE WORKS, EQUIPPED WITH 'WASSON' RINGS."



PARTIAL LIST OF USERS:

Worthington Pump &
Machinery Corp.,
Laidlaw Works,
Cincinnati, Ohio

Worthington Pump &
Machinery Corp.,
Snow-Holly Works,
Buffalo, N. Y.

The New London Ship
& Engine Co.,
Groton, Conn.

De La Vergne Machine
Company,
New York City, N. Y.

The Winton Engine
Works,
Cleveland, Ohio

Mesta Machine Company,
Pittsburgh, Penna.

Our Piston Rings are machined from castings made by a special process, resulting in a close-grained dense homogeneous grey iron with high heat resisting properties.

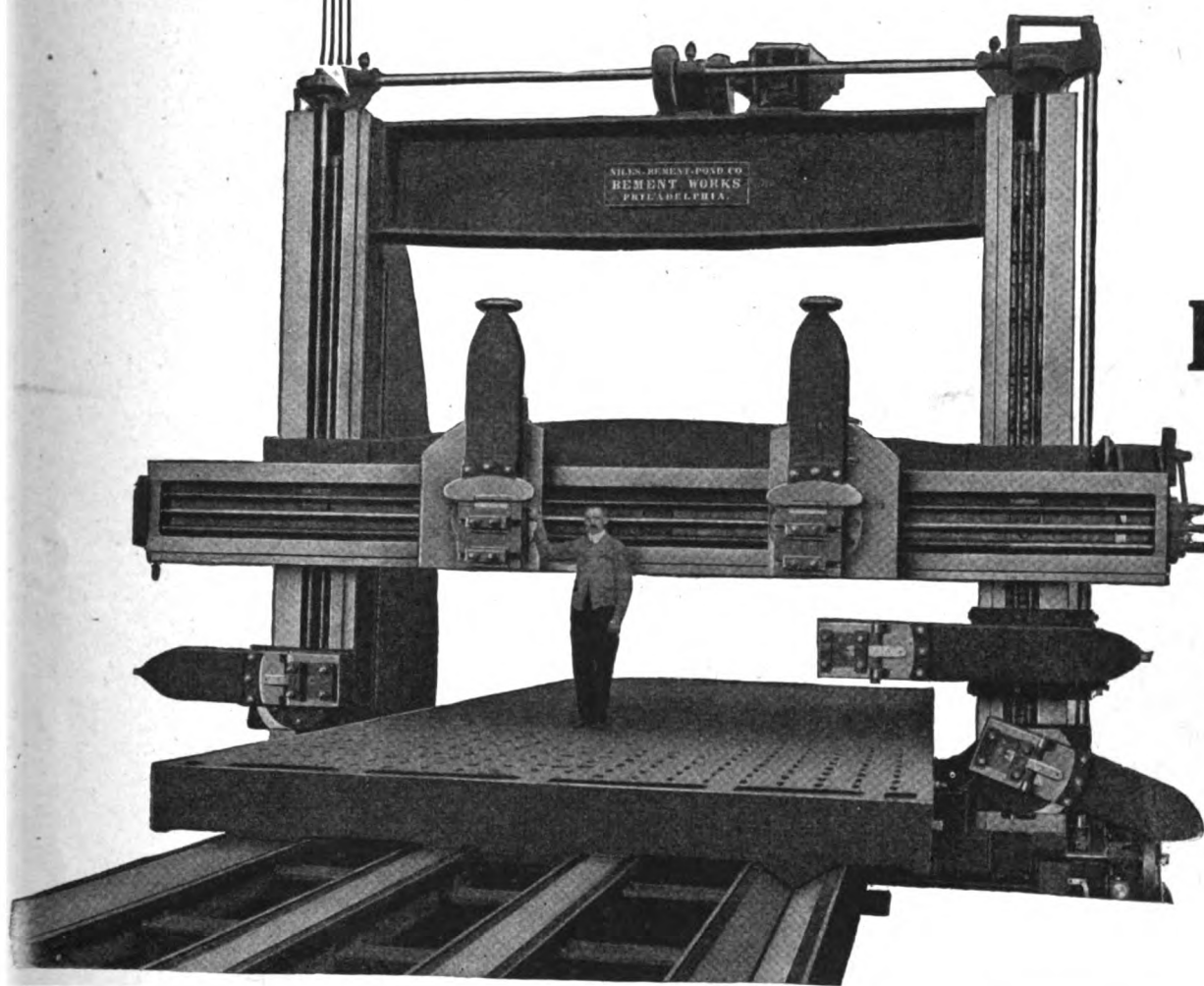
WASSON PISTON RING CO., PLAINFIELD, N.J.

The Gateway to Big Production

N-B-P Planers are made in twenty sizes from the 26-inch size to the Heavy 16-foot machine. The latter is shown on this page, illustrating the generous proportions embodied in a large, high-production machine.

Pursuant to its policy of steady improvement, this company is now building planers with a new type of drive known as the "N-B-P Drive." A motor generator set delivers power to the driving motor which is connected direct to the drive shaft. The new drive reduces the automatic control mechanism to a field rheostat and a rugged master switch. The new drive also possesses the dynamic braking feature; the current is reversed and returned to the line while stopping, which produces a marked saving in current and consequent economy of power.

Planers of all sizes can be furnished with "N-B-P Drive" for either direct or alternating current or with the reversing motor drive for direct current. The 26-inch to 72-inch machines can also be furnished belt driven or driven by a constant speed motor through belts.



N-B-P PLANERS

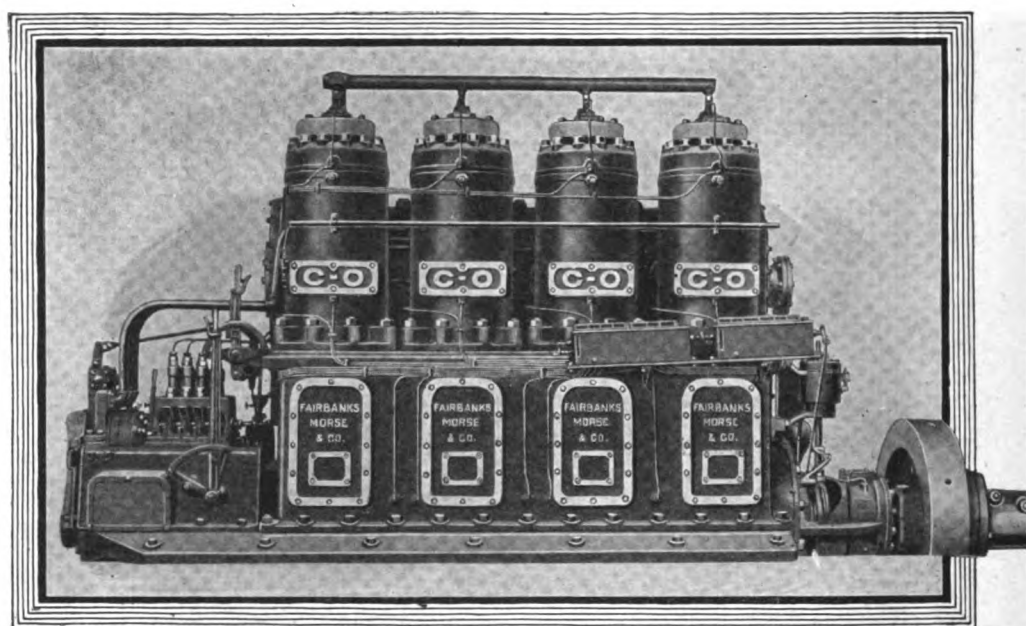
215

NILES-BEMENT-POND CO.

111 Broadway - - New York

FAIRBANKS-MORSE "C-O" Marine Oil Engines

30 H. P.
to
300 H. P.



**Steady, Economical
Power from Low
Priced Fuel Oils!**

Engine performance will largely determine the success or failure of your boat as a profit producer. You want an engine with real pulling power and you get it when you buy a "C-O."

Small or large—a boat, even if it is a mighty good boat, is better if there is a "C-O" in the engine room. They have been tried on long and short cruises, on tugs and cargo schooners—they are not only proven to be dependable power producers but they are also flexible and economical.

Built strong and sturdy. They use low grade fuel oils. When you see a strong puller and a money maker in any port it's an even chance the power is a Fairbanks-Morse "C-O" oil engine.



Fairbanks, Morse & Co.

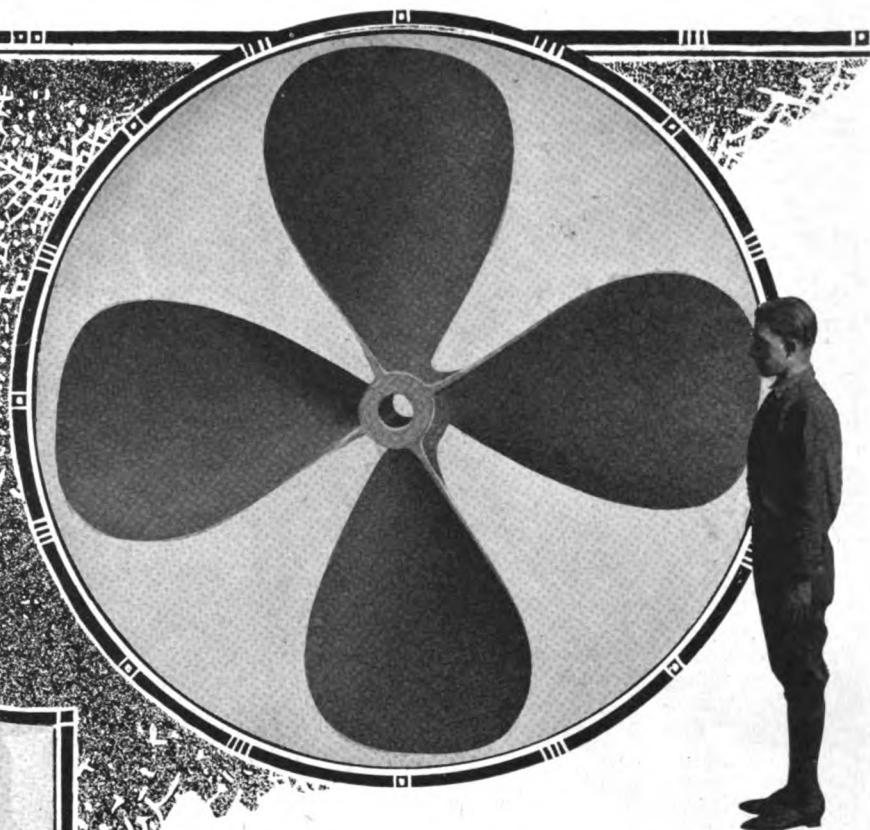
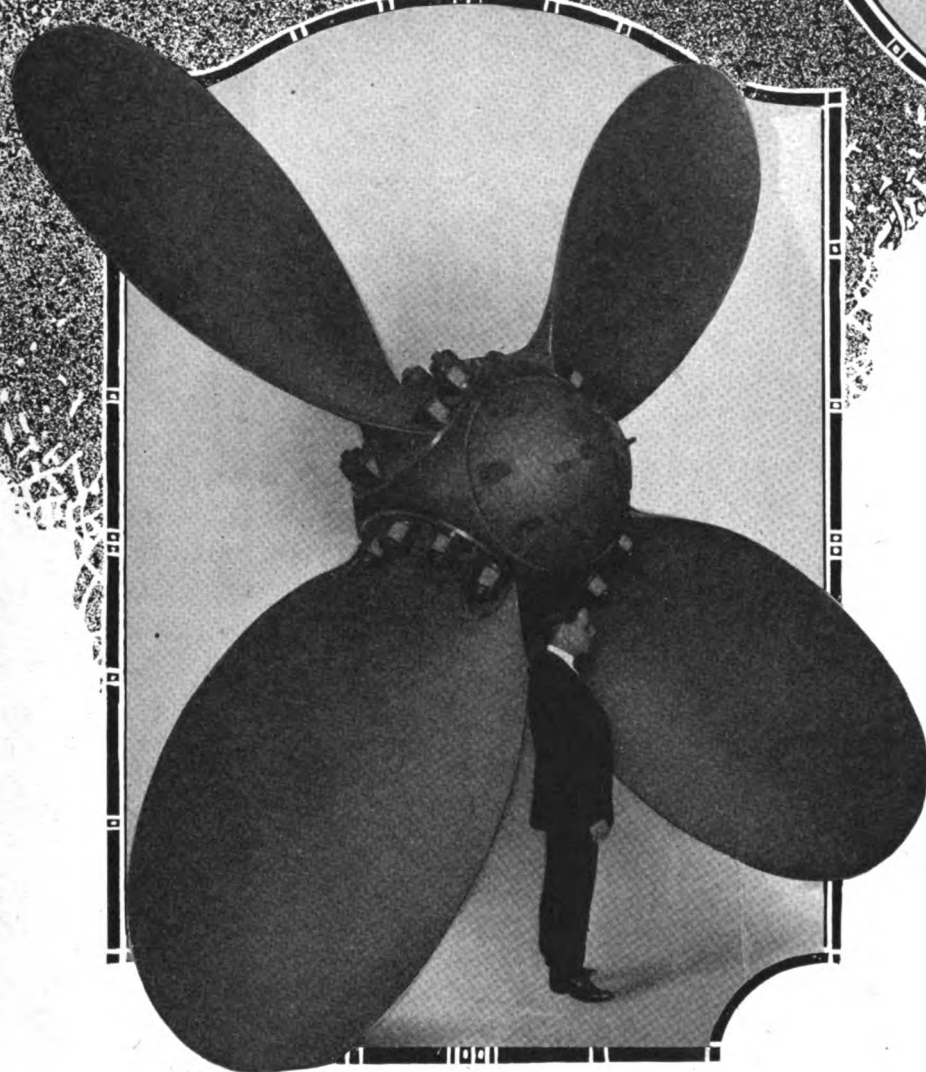
MANUFACTURERS CHICAGO

The Canadian Fairbanks-Morse Co., Limited, Montreal

Oil Engines - Pumps - Electric Motors and Generators - Fairbanks Scales - Railway Appliances - Farm Power Machinery

Big Bronze Propellers

Solid and
Sectional



COLUMBIAN Big Bronze Propellers are designed and built to meet the requirements of any ship.

Solid wheels for the smaller Motorships and Workboats. Sectional Wheels for the big freighters and passenger ships.

The repeated and proven economy of the Bronze propeller tend to make it a necessary part of the specifications for new equipment and an absolute necessity in repair and replacal work.

Columbian Engineers are at your disposal in working out the details of a suitable wheel to fit the requirements of your particular ship, to assist you in every way in increasing your propeller efficiency.

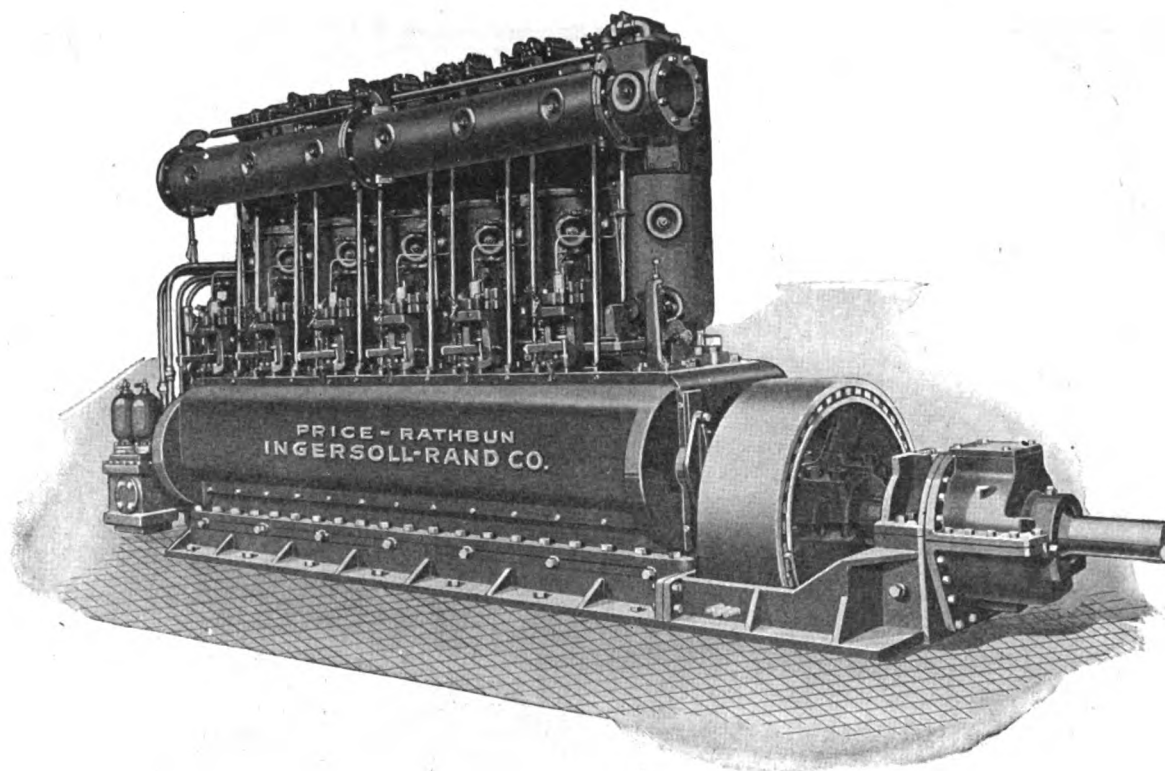
Facts and figures as to why the Bronze Propeller is more **ECONOMICAL** for you to install will be submitted on request.

COLUMBIAN BRONZE CORPORATION

522 FIFTH AVENUE

NEW YORK CITY

Marine Oil Engines



Economy plus Simplicity

With our low-compression direct-injection system 0.45 pound of fuel per shaft horse-power hour can be conservatively guaranteed.

Our highly developed full-pressure lubricating system permits of the use of one lubricant for both bearings and pistons, and a total lubricating oil consumption of less than one-third of a gallon per 1000 horse-power hours.

Consider the simplicity of a four-cycle oil-engine having low cylinder compression, sprayers of fundamental simplicity, requiring no injection-air compressor, no air-pipes nor air-bottles, and with a positive reversing system consisting of a single sliding-cam.

In this intensive design of reversible oil-engine, internal combustion has been raised to as high a plane of dependability and flexibility as is possible even with the use of steam.

Ingersoll-Rand Company

General Offices: 11 Broadway, New York

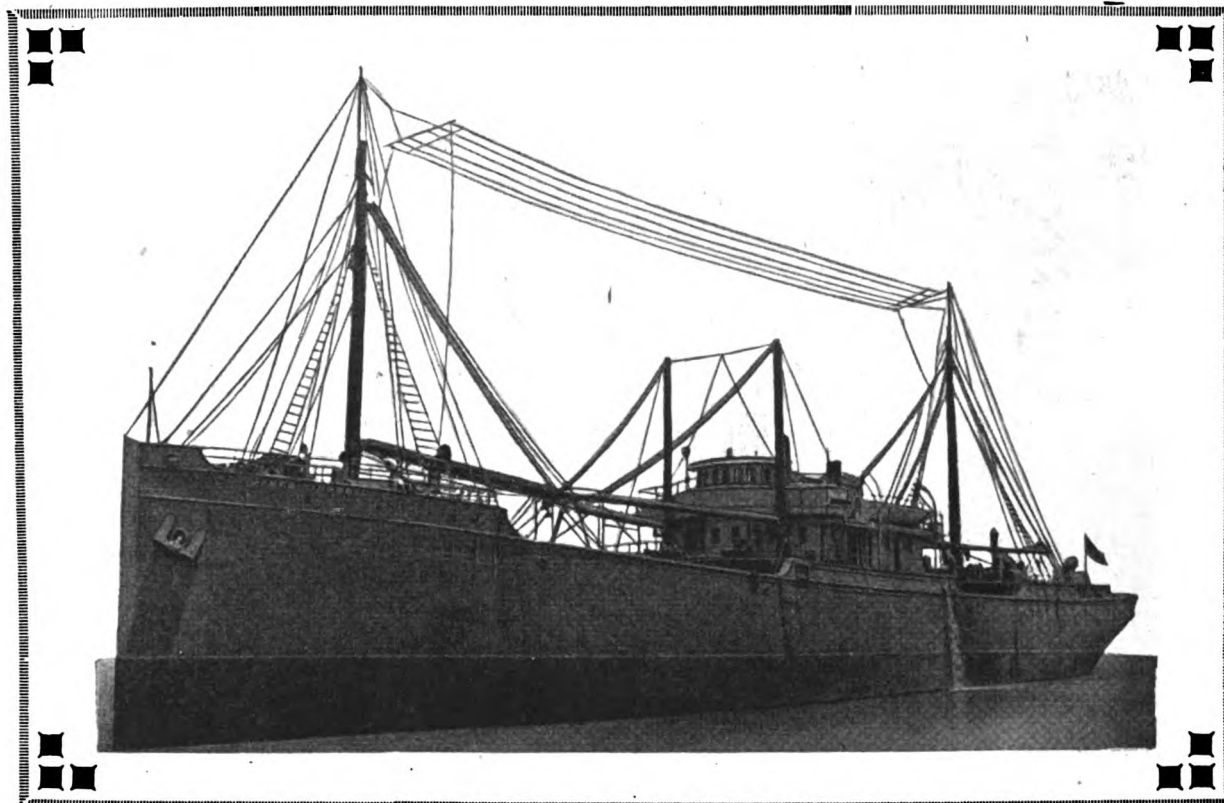
Offices Everywhere

Ingersoll-Rand
 AIR COMPRESSORS PNEUMATIC TOOLS CONDENSERS

10M-OE

REDUCTION GEARS

FOR DIESEL-DRIVEN MOTORSHIPS



THE SUCCESSFUL 3,500 TONS MOTORSHIP "JAMES TIMPSON." HER TWIN PROPELLERS ARE DRIVEN BY DIESEL ENGINES THRO' FALK REDUCTION GEARS WHICH HAVE GIVEN HIGHLY SATISFACTORY SERVICE.

ORGANIZED ESPECIALLY FOR MARINE WORK

WE HAVE PROVIDED AND HAVE IN OPERATION A LARGE NUMBER OF VERY POWERFUL, SPECIAL PRECISION MACHINES FOR PRODUCING HIGH-SPEED GEARS AND GEAR CASES FOR MARINE WORK.

OUR EXCEPTIONAL CONSTRUCTIONAL FACILITIES

OUR EXCEPTIONAL FACILITIES FOR HANDLING MARINE WORK HAVE ENABLED US TO PRODUCE GEARS FOR THIS FIELD AGGREGATING MORE THAN 2,500,00 H.P., AND WE ARE NOW WORKING ON CONTRACTS AMOUNTING TO OVER 3½ MILLION H.P.

THE FALK COMPANY

MILWAUKEE, WISCONSIN, U. S. A.

M. P. FILLINGHAM
50 CHURCH STREET, NEW YORK CITY

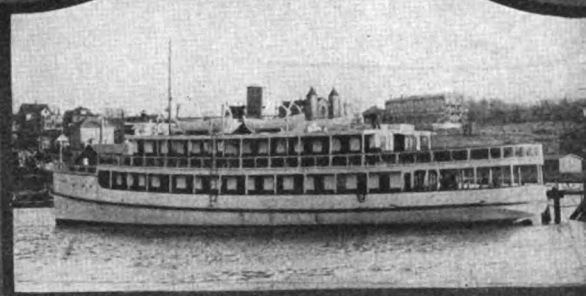
F. W. GRIMWOOD
RIALTO BUILDING, SAN FRANCISCO, CAL.

W. O. BEYER
1024 PARK BUILDING, PITTSBURGH, PA.

NEW LONDON SHIP & ENGINE CO.

GROTON, CONN., U.S.A.

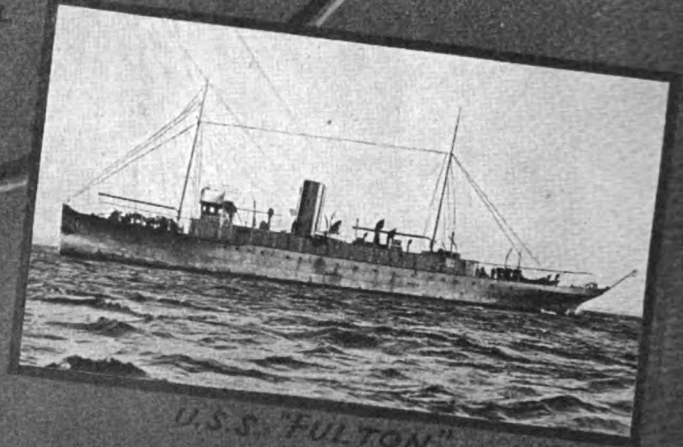
*Builders of High Grade Heavy Duty Type
Marine Diesel Engines*



PASSENGER VESSEL
"NELSECO II"



TUG "CHICKAMAUGA"



U.S.S. "FULTON"



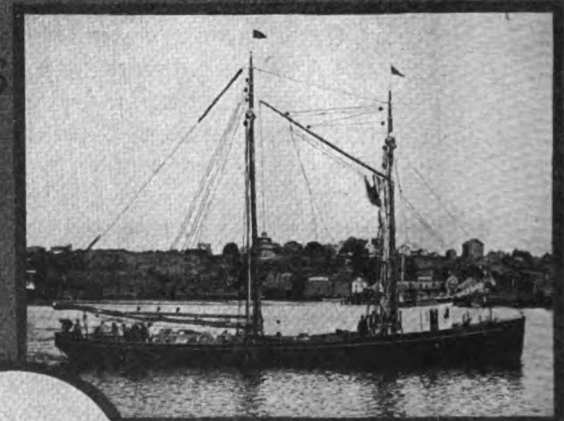
CANNERY TENDER "WARRIOR"



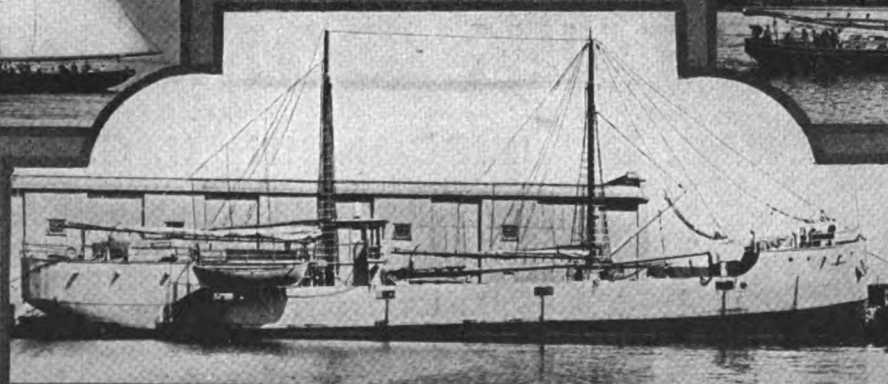
YACHT "IDEALIA"



FISHING SCHOONER
"MANHASSETT"



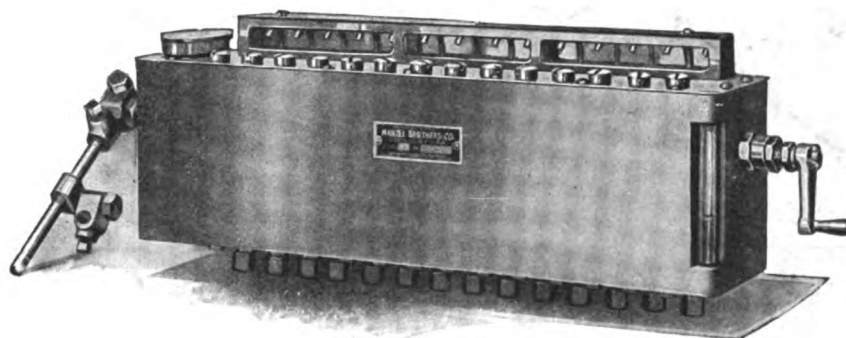
FISHING SCHOONER
"LUCIA"



CARGO VESSEL "CERRITO"

America's First Marine
Diesel Engine Builders
Over 150,000 B.H.P.
Now In Use or On Order
Sizes 120 H.P. and Upwards

Feeds
the oil
regularly
and
in just
the
right
quantities



The
Oiler
with
the
Piston
Valves

Lubricate Your Engine Cylinders and Bearings with the "Manzel" Positive Force Feed Oiler

ENGINES EQUIPPED WITH "MANZEL" OILERS LAST LONGER—REQUIRE LESS ATTENTION—USE LESS OIL

The "Manzel" Force Feed Oiler has been designed to lubricate the cylinders and bearings of Heavy Duty Engines economically and effectively.

It supplies fresh oil regularly and in just the right quantities.

It prevents the formation of carbon.

It can be easily and accurately adjusted, while the engine is running, to supply any amount of oil required, and will supply small or large quantities with equal regularity.

It is easy to adjust, simple to install and positive always. Each feed is adjusted independently.

The "Manzel" Force Feed Oiler contains no ball valves, small springs, or checks, and has no complicated mechanism.

It is operated on the Piston Valve principle, and is the only oiler of its kind on the market.

It is simple in construction—absolutely positive in operation.

It will pump against any pressure required and will handle heavy or light oil.

It may be run in either direction and at high or low speed.

It will oil your engine cylinders and bearings the way they should be oiled.

"Manzel" Oilers are made in sizes and styles to fit any engine.

The Manzel factory is devoted entirely to the manufacture of Force Feed Oilers, and we are in a position to furnish exactly what you need, and to make prompt delivery of oilers in any quantities.

Write for Catalogue

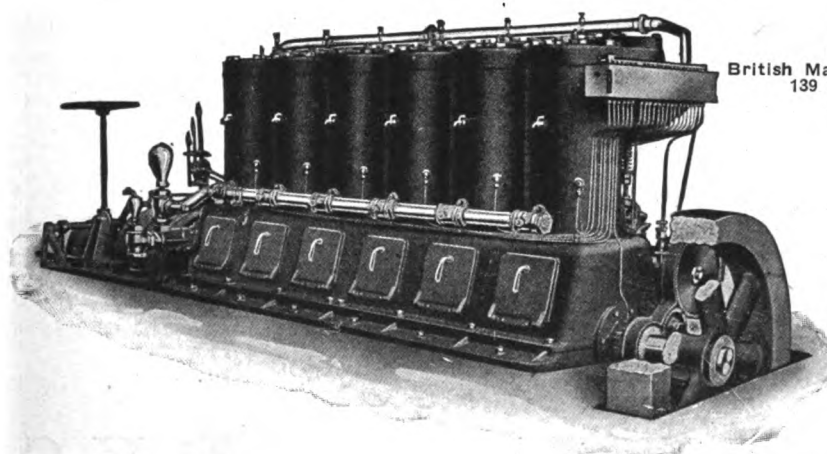
Manzel Brothers Company

ESTABLISHED 1898

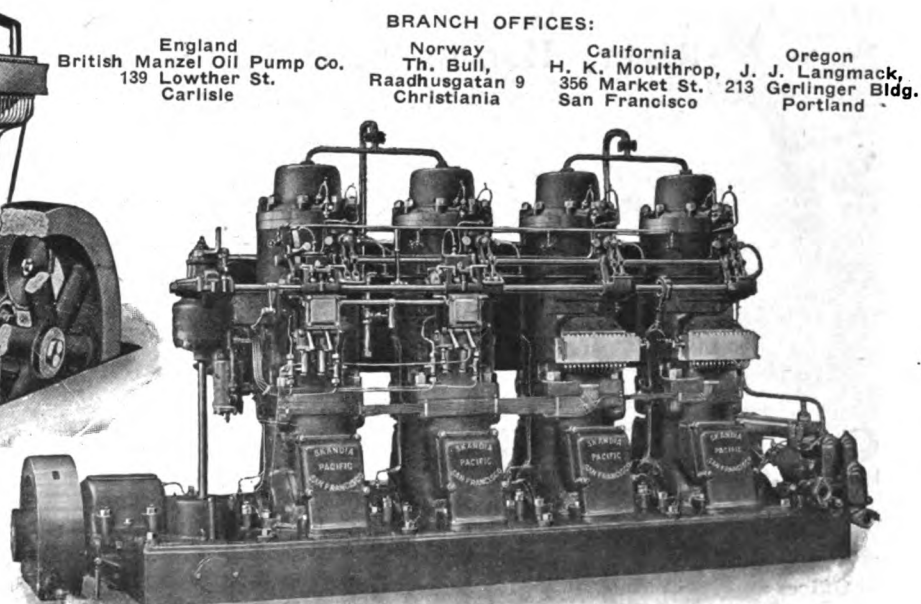
INCORPORATED 1905

300-302 Babcock Street

Buffalo, N. Y., U. S. A.



200 H. P. six-cylinder
Heavy Duty Kerosene Engine,
Built by Wolverine Motor Works,
Equipped with a "Manzel" 22-feed 2-compartment oiler



240 H. P. Direct Reversible Oil Engine,
Built by Skandia Pacific Oil Engine Company,
Equipped with two "Manzel" 14-feed oilers.

BRANCH OFFICES:

England
British Manzel Oil Pump Co.
139 Lowther St.
Carlisle

Norway
Th. Bull,
Raadhugatan 9
Christiania

California
H. K. Mouthrop,
356 Market St.
San Francisco

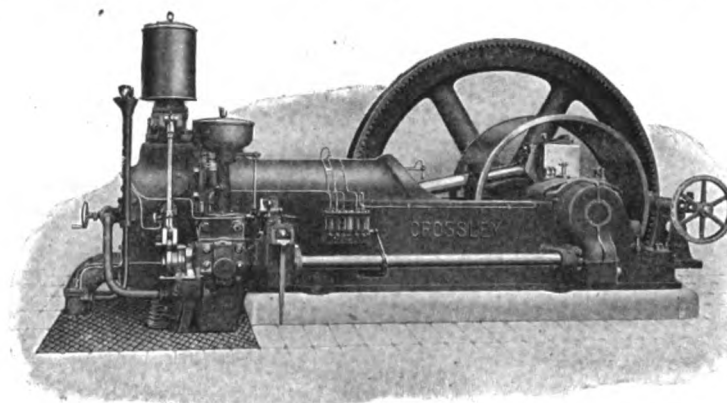
Oregon
J. J. Langmack,
213 Gerlinger Bldg.
Portland

CROSSLEY

OIL ENGINES

*For All
Purposes*

*Simple,
Reliable
and
Economical*



*For All
Brands
of
Refined
Crude
and
Residual
Oils*

IN these Engines a remarkably low fuel consumption is obtained without the use of excessive compression, outside air compressor, injection air receiver or other complicated details. They provide the ideal method of utilizing heavy oils for power purposes.

CROSSLEY BROTHERS, LTD.
MANCHESTER ENGLAND
MAKERS OF THE HIGHEST GRADE INTERNAL COMBUSTION ENGINES IN THE WORLD

E. JOHNSON
President and General Manager

Cable Address
"S M A W O K"

Established 1899

THE MASTER ENGINE BUILDERS OF THE NORTHWEST

BUILDERS OF
HEAVY DUTY MARINE ENGINES
(500 H P to 3000 H P)

River, Harbor and Gold Dredges — Hoisting Machinery
General Marine Machine Works

Specialists in the Overhauling
and Repair of Marine Oil Engines

SEATTLE MACHINE WORKS
(INCORPORATED)

Offices and Main Plant:
37 to 51 WEST LANDER ST.
(On the East Waterway)

SEATTLE, WASHINGTON
Telephone, Elliott 3960

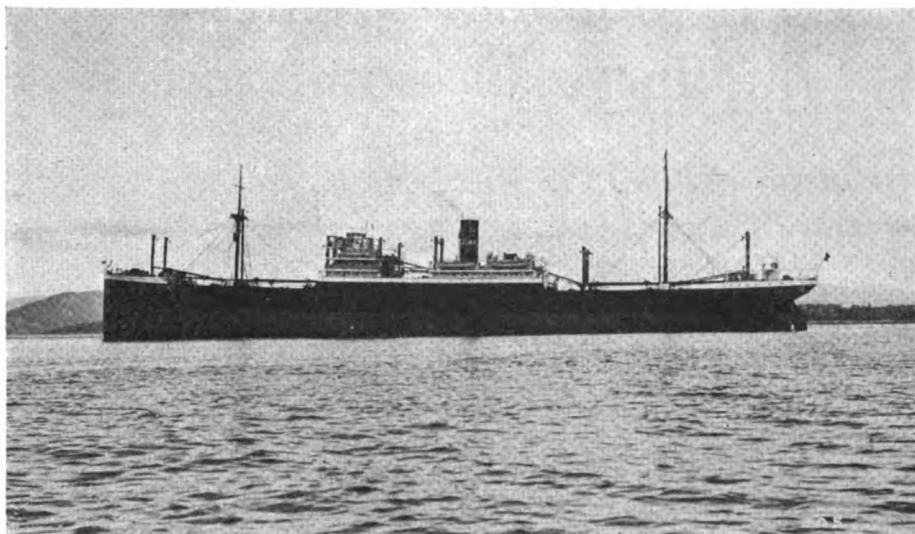
Auxiliary Plant with
Private Wharf,
On Duwamish Waterway
(Georgetown Sta.)

HARLAND & WOLFF LTD.

Shipbuilding & Engineering Works

BELFAST ♦ GLASGOW ♦ GREENOCK

M. S. "Glenogle"
Deadweight Capacity
12,300 Tons



Built for the Glen Line

Diesel Engine Works FINNIESTON & SCOTSTOUN GLASGOW

Repair Works LIVERPOOL & SOUTHAMPTON

London Office, 1a Cockspur St., S. W.

FROUDE HYDRAULIC ABSORPTION DYNAMOMETERS

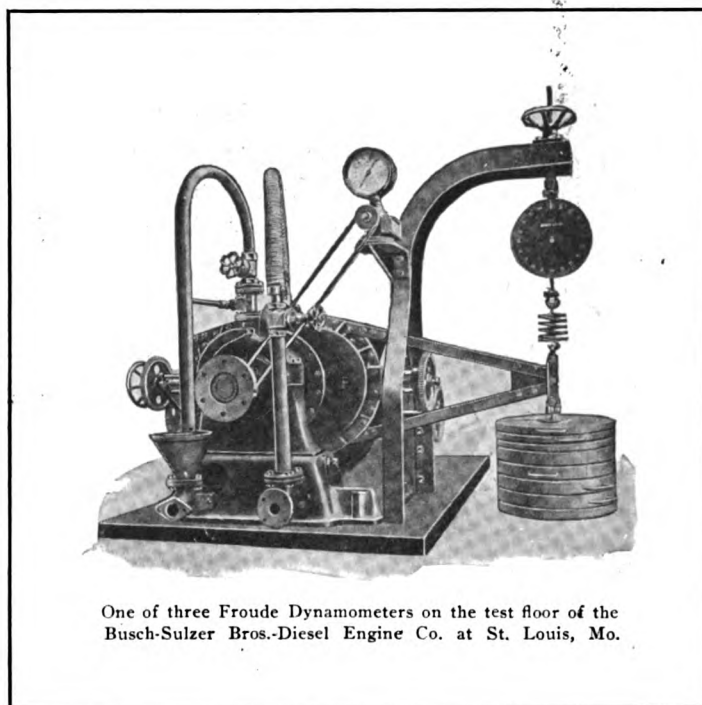
Froude Dynamometers have proved their merit on the test floors of many Diesel Engine Manufacturers in all countries.

✕

Their accuracy is scientifically absolute.

✕

WRITE FOR
BULLETIN
F-70.



One of three Froude Dynamometers on the test floor of the Busch-Sulzer Bros.-Diesel Engine Co. at St. Louis, Mo.

Froude Dynamometers are suitable for testing rotary prime movers of every type at any speed.

✕

They are built in all sizes and each dynamometer has a large capacity and speed range.

✕

They operate silently and either load or speed or both may be varied while operating.

C. H. WHEELER MFG. CO.
PHILADELPHIA, PA.

FOR SALE

Four 320 H. P. Bolinder engines and auxiliaries
in first-class condition.

Will be Sold at a Very Reasonable Figure

Available for Immediate Delivery

PARTICULARS ON REQUEST

These engines are being sold only for the reason that they are too small for the ship in which they are installed, and are to be replaced with larger engines of the internal combustion type.

ASTMAHCO NAVIGATION COMPANY, Inc.

347 MADISON AVENUE,

NEW YORK CITY

CABLE ADDRESS—ASTMAHCO.—NEW YORK



Get the Last Ounce of Power

—consistent, economical engine power—by the use of 

MOTOR FUEL OIL

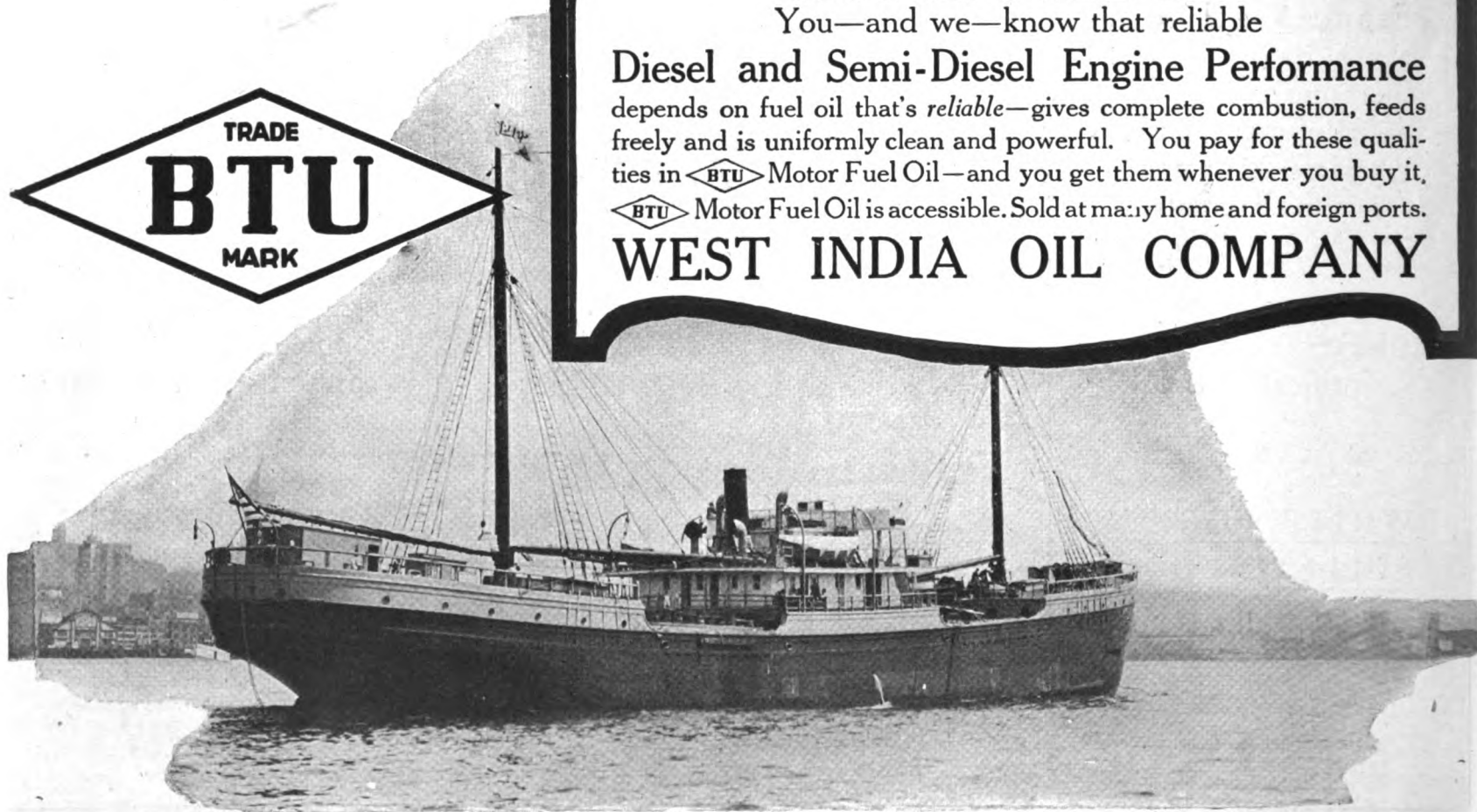
You—and we—know that reliable

Diesel and Semi-Diesel Engine Performance

depends on fuel oil that's *reliable*—gives complete combustion, feeds freely and is uniformly clean and powerful. You pay for these qualities in  Motor Fuel Oil—and you get them whenever you buy it.

 Motor Fuel Oil is accessible. Sold at many home and foreign ports.

WEST INDIA OIL COMPANY



UNITED AMERICAN LINES

INCORPORATED

Managing Agents for
AMERICAN HAWAIIAN STEAMSHIP CO.
AMERICAN SHIP and COMMERCE NAVIGATION CORPORATION
U. S. Agents for HAMBURG AMERICAN LINE

Semi-Monthly Cargo Service

between NEW YORK and
 NORTH COAST OF AFRICA, MALTA AND
 LEVANT PORTS

Cargo accepted in trans-shipment to Red Sea Ports.
 Loading Berth Pier No. 6 Bush Terminal, Brooklyn

Dutch East Indies

SINGAPORE, BATAVIA, SAMARANG
 AND SOERABAYA

Loading Berth, Pier No. 21 Clifton, S. I.

Fortnightly Cargo Service

The Panama-Canal Line of the American-Hawaiian
 Steamship Co.

from
 New York to Pacific Coast Ports
 Loading Berth, Pier No. 6 Bush Terminal, Brooklyn

Weekly Cargo Service

Jointly with the Hamburg-American Line between
 NEW YORK and HAMBURG

Loading Berth, Pier No. 7 N. R.

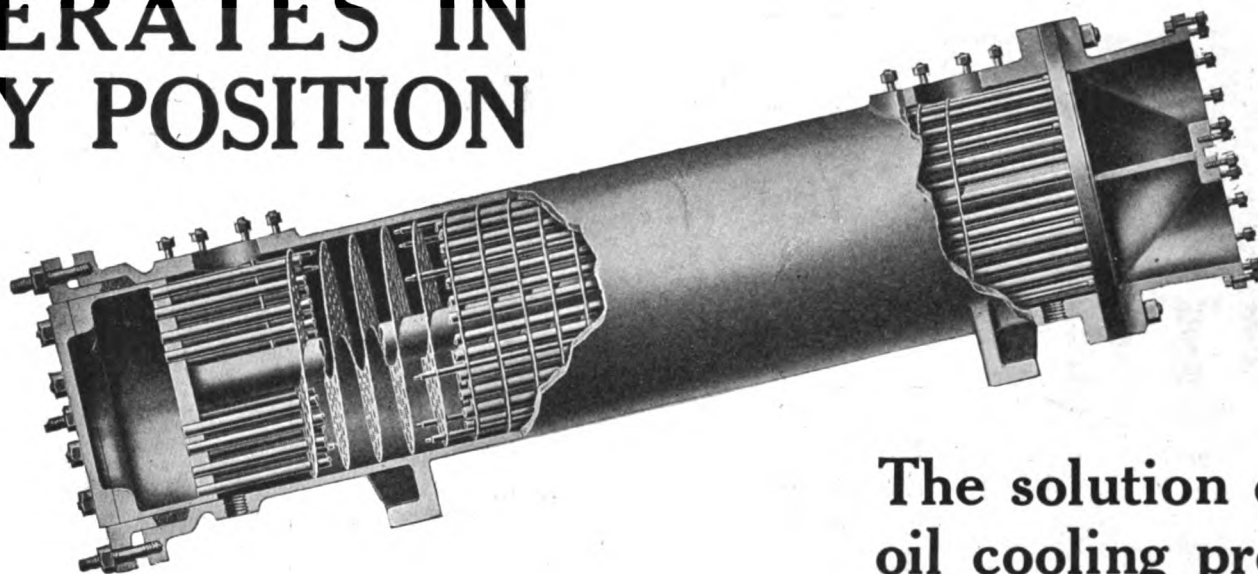
General Offices: 39 BROADWAY, New York

Telephone: Whitehall 1020

Cable Address: "Unamline, New York"

327 So. LaSalle St., Chicago | Branch Offices | 40 Central St., Boston

OPERATES IN ANY POSITION



The solution of the
oil cooling problem

Multiwhirl Cooler

For Cooling Piston and Bearing
 Oil in Diesel Engines

For the General Cooling
 of Lubricating Oils

Send for Bulletin No. 902

THE GRISCOM - RUSSELL CO.

2154 West Street Building, New York

Philadelphia
 Boston
 Hartford
 Springfield

Pittsburgh
 Cleveland
 Toledo
 Detroit

Chicago
 Minneapolis
 St. Louis
 New Orleans

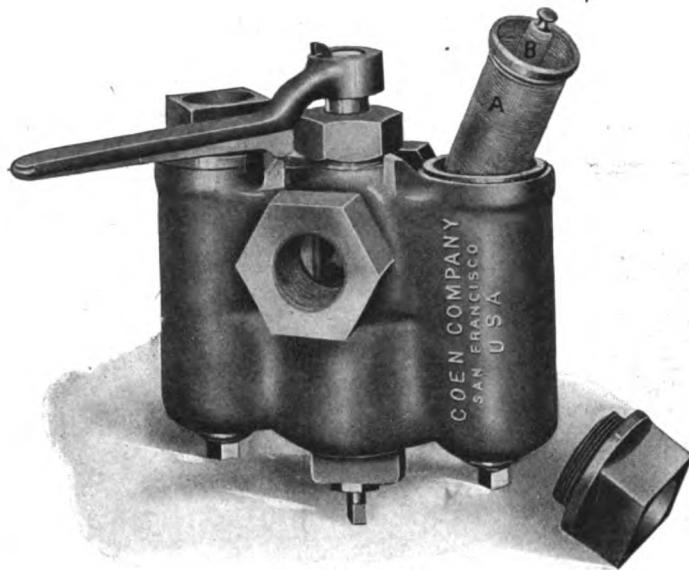
Houston
 Fort Worth
 Charlotte
 San Francisco

Seattle
 Los Angeles
 Kansas City
 Milwaukee

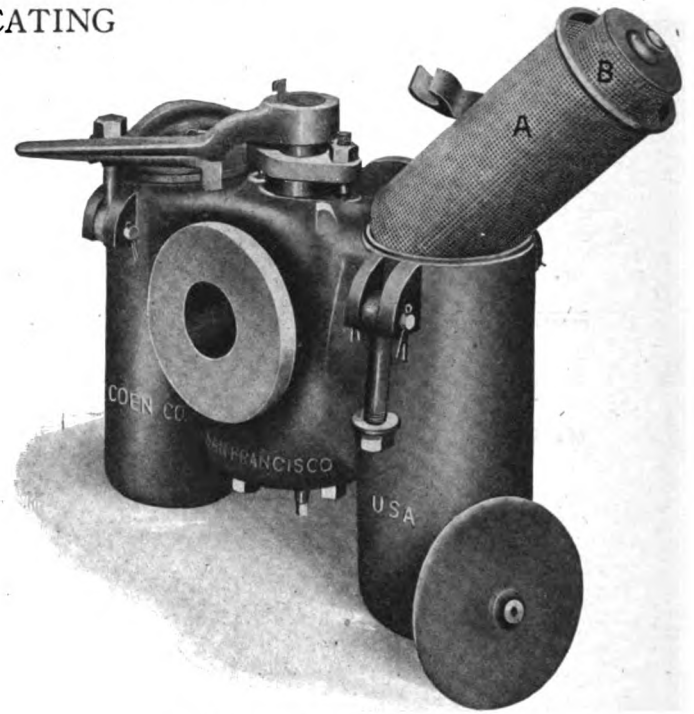


"COEN" DUPLEX STRAINER

FOR
FUEL AND LUBRICATING
OILS, ETC.



DISCHARGE



SUCTION

COEN COMPANY, Inc.

OIL BURNING SPECIALISTS

EXECUTIVE OFFICES:
SAN FRANCISCO

SEATTLE OFFICE
115 Grand Trunk Dock

PORTLAND OFFICE
51 First Street

NEW YORK OFFICE
50 Church Street

PHILADELPHIA OFFICE
303 Finance Building

BRUNSWICK

Ice Machines
Belt or Steam Drive

Exclusive rights in the United States for
the manufacture and sale of the well
known J. & E. Hall CO₂ refrigerating
equipment.

BRUNSWICK REFRIGERATING CO.

410-480 Jersey Avenue

NEW BRUNSWICK

NEW JERSEY

TREAT 'EM ROUGH!



They're

OFFICES:
BOSTON
NEW YORK
PHILADELPHIA
CLEVELAND
SAN FRANCISCO
SEATTLE
PORTLAND, ORE.
VANCOUVER, B.C.

A-E-Co CAPSTANS

Built Rugged to Weather Hard Use

May we send you the new catalog?

WE ALSO BUILD
STEERING GEAR
TELEMOTORS
WINDLASSES
WINCHES
TOWING MACHINES
CAPSTANS
GYPSES
CHANDLERY

AMERICAN ENGINEERING COMPANY, Philadelphia



Standard Oil Co.'s coastwise tanker "Delivery No. 5" 300 h.p. STANDARD engine

Proven Profits are in the STANDARD engined boat

YOU have *known* factors to go by in the STANDARD engined boat. You have the most practical, most economic working proposition available to the world today.

Competitive service in the large operating fleets where only cold facts count has proven these things; fleets operated by those in the

first rank of world's progress and who pay dividends.

Their experience is your opportunity, surely. Can you afford to experiment when you can profit by their experience?

Let us work out from the data we have what your boat will do.

Back of the STANDARD guarantee is the

STANDARD MOTOR CONSTRUCTION COMPANY
JERSEY CITY, N. J.

CRAIG

FOUR-CYCLE DIESEL-TYPE

MARINE OIL ENGINES



JAMES CRAIG ENGINE AND MACHINE WORKS

807 GARFIELD AVENUE

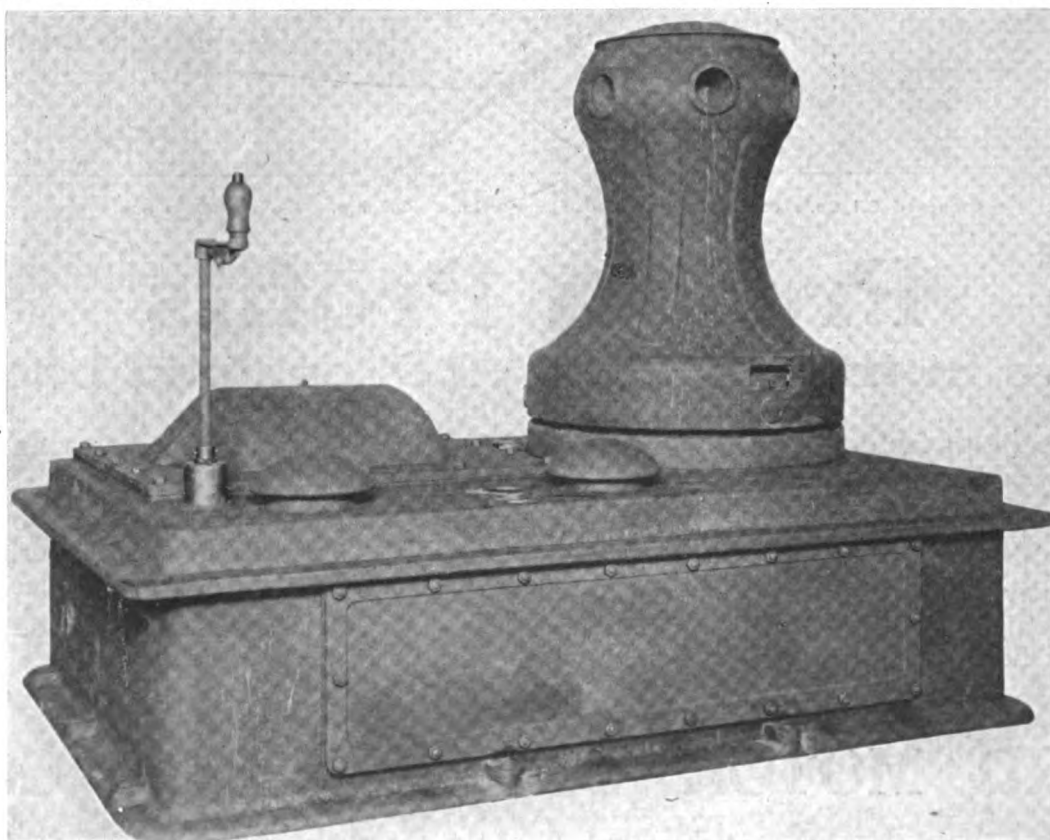
JERSEY CITY, N. J., U. S. A.

MARKEY MACHINERY CO.

SEATTLE, U. S. A.

Builders of Auxiliary and Deck Machinery for Motor and Steam Vessels; Electric and Steam Driven Cargo Hoists, Anchor Windlasses, Steering Gears and Capstans

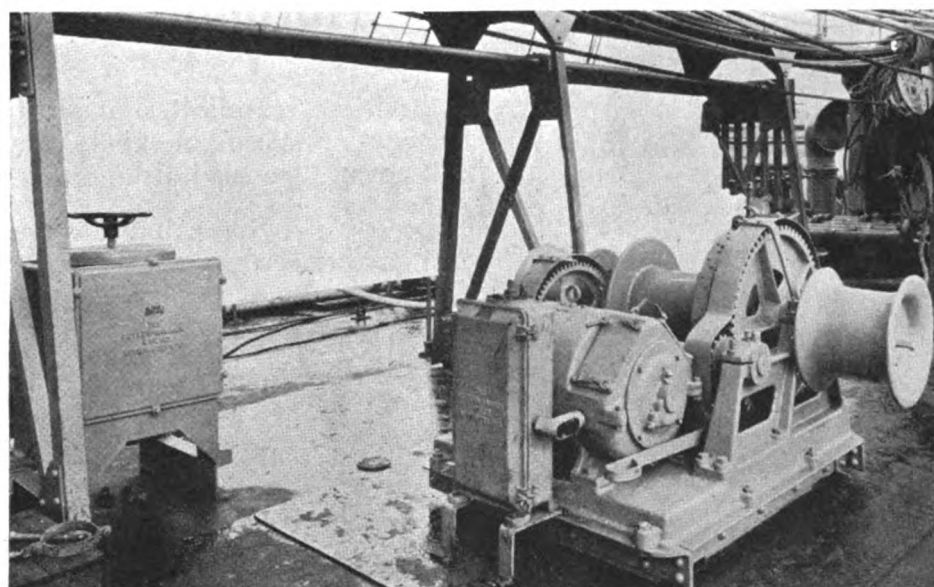
Our Electric Capstan can be set on the deck or flush with the deck if desired or it can be arranged with the machine below and the capstan head above.



The cut shows our capstan built with flange on base allowing for 3 in. wood deck. Other arrangements can be made as desired.

HYDE WINDLASS COMPANY - Bath, Maine

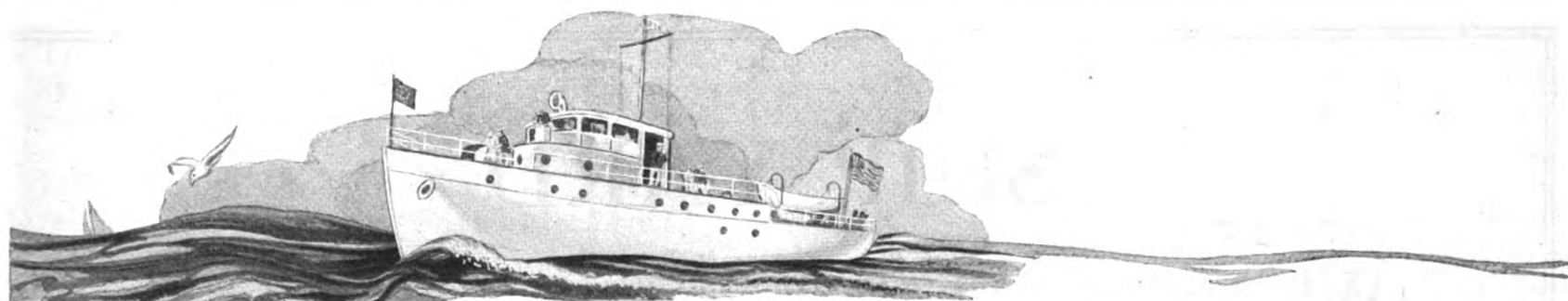
High grade marine auxiliary machinery and manganese bronze propellers



The Hyde electric-winch on the deck of Texas Co.'s Motorship "SOLITAIRE"

Hydro-electric Steering-gears, electric-windlasses, electric-winchs, electric-capstans for motorships a specialty

When ordering specify **"HYDE"**



EFFICIENT DEPENDABLE POWER FOR MARINE PURPOSES

"Western" Diesel Stationary Engines hold an enviable position in the power world. In actual service in practically every power-using country, they have proved superior to any other Diesel or heavy duty type of internal combustion engine built. And in the same manner, the

"Western" Diesel Marine Engine

will prove to the marine world that it is just as superior for marine power purposes—in advance of any similar type of power equipment built today.

Our claim of superiority is based upon the four outstanding features of "Western" Diesel Engines—highest efficiency, utmost economy in operation and maintenance, absolute dependability, and extreme simplicity in design, construction and operation.

"Western" has attained Diesel efficiency and economy in operation and better than Diesel dependability, without the intricate constructional complications of ordinary Diesel engines, such as high pressure injection air compressors and fuel pumps.

The "Western" is not a so-called Semi-Diesel nor electrical or hot surface ignition engine. It operates on the true Diesel principle, using the lowest grades of fuel oil in their natural state.

Built in sizes of 25 B.H.P. per cylinder in single and multiple units up to six cylinders.

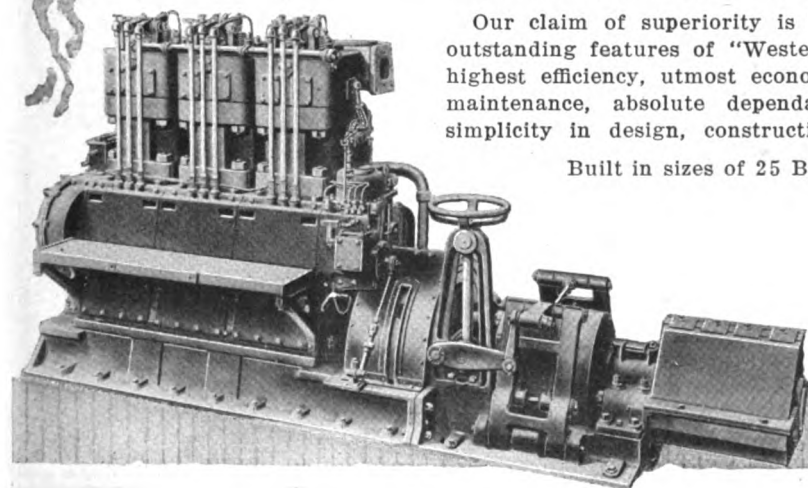
Send for Bulletin No. 536

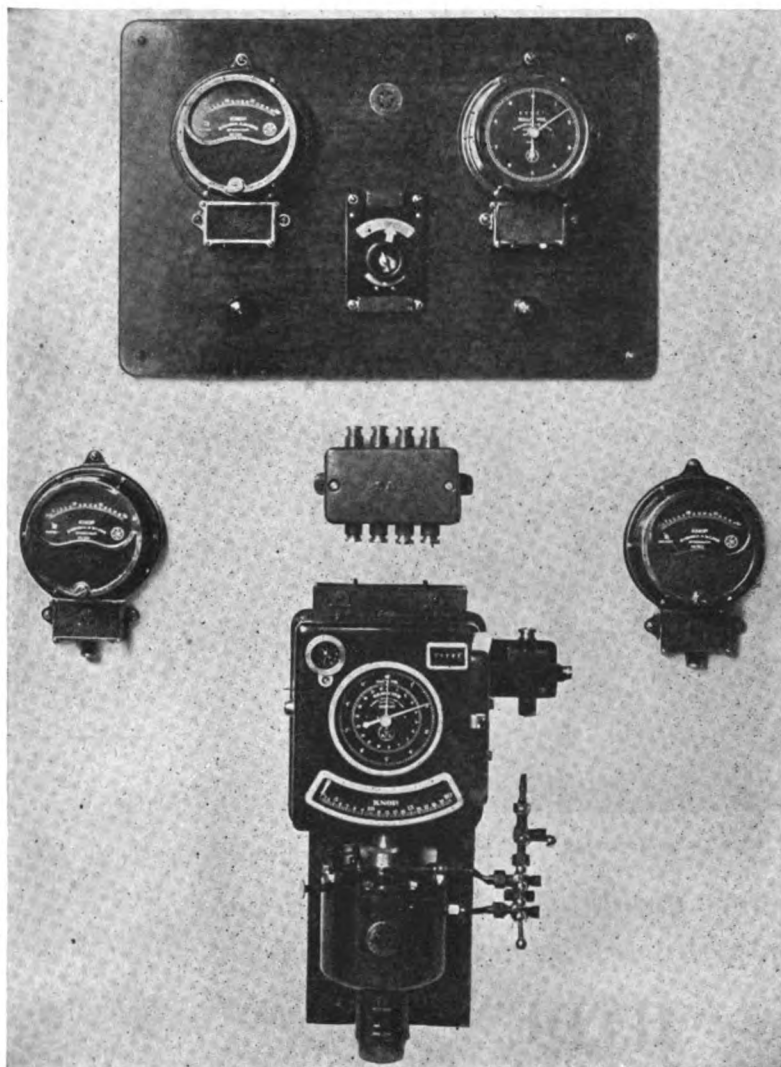
WESTERN MACHINERY COMPANY

936 No. Main St.

Los Angeles, Calif., U.S.A.

Branch: Rialto Building, San Francisco.





SAL LOG

Automatic Hydro-Electric

Indicates at all times the actual speed in knots and records total traveled distance.

Speed indicators and distance recorders can be located on the bridge, in the chart room, and wherever desired.

On the most modern motorships like "Bullaren," on liners like "Stavangerfjord," on men-of-war, etc., the Sal-log has been found indispensable.

Used successfully since 1914.

Write for information

HAMILTON & HANSELL, Inc.

15-21 Park Row

NEW YORK CITY

SHIP YARD

WE have purchased the entire Plant and Property, known as The Maryland Ship Yard & Supply Base, located at Soller's Point, Baltimore, Maryland.

Stock is complete, consisting in part of Main Engines, Towing Engines, Condensers, Generators, Tanks, Life Boats, Life Rafts, also Ship Supplies, Wire Rope, Manilla Rope, Electric Cable, etc., Ship Yard Plant Equipment and Accessories, such as, Compressors, Air Tools, Woodworking Machinery, etc., which we offer for sale in large or small quantities for immediate shipment. All materials have passed U. S. Steamship inspection and Lloyds. Inspection of material cheerfully accorded to all prospective buyers.

NATIONAL SHIP SUPPLY & MACHINERY CO.

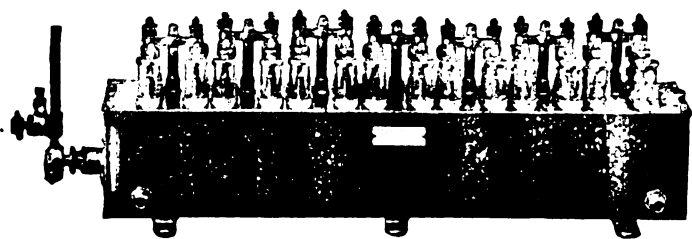
Main Office, 1660-62 WOOLWORTH BUILDING

New York City

Telephones: Barclay 5190-5191

Plant Address:
Soller's Point, Baltimore, Md.

Chicago Address:
737-738 Monadnock Building, Chicago, Illinois



McCord Class "B" Force-Feed Lubricator

Makes Full Use of Every Drop of Oil

THE McCord Force Feed Lubricator gives dependable service on marine motors because it makes full use of every drop of oil—insures positive, reliable lubrication.

It is not affected by varying temperatures, viscosity, pressure, vacuum, and length of feed lines.

The pumps on the McCord start, stop, and change speed with the engine. Quick "finger" adjustments for each feed add to the many convenient features.

The oil is fed through a gauge glass in plain sight—there being a gauge glass for each pump.

Designed and constructed to be absolutely reliable under all conditions—McCord Lubricators automatically feed just the right amount of oil in the right place, at the right time.

The saving in oil that results from using McCord Lubricators often is as high as 50 per cent.

Let us send you complete information about the McCord. Our catalog will be forwarded to you upon request.

McCord Manufacturing Company, Inc.
Detroit, Michigan

Manufacturers of McKim Gaskets
and McCord Automobile Radiators

McCord Force-Feed Lubricators

The Line of Easiest Resistance

DURING periods of business depression or "tightness" in the money market, some Companies drastically reduce their advertising appropriation. An immediate financial saving is thus affected!

BUT the resultant loss in business is much slower and its cause is very difficult to trace direct. Nevertheless it is the line of easiest resistance! And, for that reason, is often followed.

CONSEQUENTLY, it takes a strong-minded and far-sighted Executive to remain steadfast to a bold, but discriminating, publicity campaign under problematical conditions of trade. Only born leaders of industry can do this without nervousness!

BUSINESS in the American oil-engined motorship industry was never more sound and staple than at present, and the near-future also looks very bright. But general business conditions, while cheerful in prospect, are a little unsettled because of the current endeavors to return to "nearer pre-war prices" without equivalent wage reductions.

SHOULD a quiet period develop, what will be YOUR publicity policy? That will be a real test! The truly big man of business will look as far as the horizon, and will protect his Company's future with an advertising program proportionate to the maximum capacity of his Plant with quiet confidence in the ultimate result.

MANY of us occasionally forget that we are in business for life—not merely for to-day. Advertising does not effect to-day's sales; but gives prestige in the World's markets, and creates an interest which produces orders later on!

IT is a form of business life-insurance that protects the future production of your Plant!

Are you going to let your Insurance Policy lapse, or are you too big a man?

United States Shipping Board

Offers for Sale

STEEL & WOOD SHIPS AND WOOD HULLS

Bids will be received on a private competitive basis in accordance with the Merchant Marine Act at the office of the United States Shipping Board, 1319 F Street N. W., Washington, D. C.

The ships offered for sale include steel vessels and wooden steamers.

The steel steamers are both oil and coal burners. The Board has established a minimum price on these vessels.

Terms on Steel Steamers

Ten per cent of the purchase price in cash upon delivery of the vessel; 5% in 6 months thereafter; 5% in 12 months thereafter; 5% in 18 months thereafter; 5% in 24 months thereafter. The balance of 70% in equal semi-annual installments over a period of ten years; deferred payments to carry interest at the rate of 5% per annum.

* * *

The two hundred and eighty-five wooden steamers for sale are of ten different types, as follows: Nine Daugherty Type; Seventeen Ballin Type; Ten Peninsula Type; Six Pacific American Fisheries Type; One Allen Type; One Lake and Ocean Navigation Company Type; Thirteen McClelland Type; One Hundred and Eighty-six Ferris Type; Thirty-one Hough Type; Eleven Grays Harbor Type. Also have a number of wooden hulls of various types.

Terms on Wooden Steamers

Ten per cent cash on delivery. Balance in equal semi-annual installments over a period of three years.

Bids may be submitted for one or more vessels or for any combination of above vessels, and must be accompanied by certified check made payable to the U. S. Shipping Board for 2½% of amount of the bid.

Bids should be submitted on the basis of purchase "as is and where is."

Further information may be obtained by request sent to the Ship Sales Division, 1319 F Street N. W., Washington, D. C.

The Board reserves the right to reject any and all bids.

Bids should be addressed to the
UNITED STATES SHIPPING BOARD
WASHINGTON, D. C.

and indorsed "BID FOR STEAMSHIP [Name of Ship]"

The East Asiatic Co., Ltd.

Aktieselskabet Det Østasiatiske Kompagni,
COPENHAGEN

TO THE EAST:

Sailings from COPENHAGEN, GOTHENBURG and CHRISTIANIA to HONGKONG, SHANGHAI and JAPAN PORTS.
Sailings from COPENHAGEN, GOTHENBURG and occasionally CHRISTIANIA and MIDDLESBROUGH to PORT SAID, COL-OMBO, PENANG, SINGAPORE and BANGKOK.

TO SOUTH AFRICA:

Sailings from DENMARK, NORWAY and SWEDEN to CAPE TOWN, MOSSEL BAY, ALGOA BAY (PORT ELIZABETH), EAST LONDON, DURBAN (PORT NATAL), DELAGOA BAY (LOUR-ENCO MARQUES) and BEIRA.

TO AUSTRALIA:

Sailings from DENMARK, NORWAY and SWEDEN to FREMAN-TLE, ADELAIDE, MELBOURNE and SYDNEY, taking cargo in through freight to QUEENSLAND, NEW ZEALAND, TAS-MANIA, and the PACIFIC OCEAN.

TO NORTH PACIFIC:

Sailings from COPENHAGEN, GOTHENBURG and CHRISTIANIA to COLON and PANAMA (with transshipment to CENTRAL AMERICAN PORTS), LOS ANGELES HARBOUR, SAN FRAN-CISCO, PORTLAND (ORE.), TACOMA, SEATTLE and VAN-COUVER.

TO SOUTH PACIFIC:

Sailings from COPENHAGEN, GOTHENBURG and CHRISTIANIA to COLON and PANAMA (with transshipment to CENTRAL AMERICAN PORTS), GUAYAQUIL, CALLAO, MOLLENDO, IQUIQUE, ANTOFAGASTA, and VALPARAISO.

For further particulars please apply to:

THE EAST ASIATIC CO., LTD. - - - COPENHAGEN
THE EAST ASIATIC CO., LTD., 158 Fenchurch St., LONDON, E. C.

United States of America:

The East Asiatic Co., New York Agency, Inc., 60 Wall St., N. Y. City
Otto Jelstrup, 310 Sansome Street, San Francisco, California

St. Thomas, V. I., U. S. A.

Cheapest Oil and Coal Bunkering Station in the West Indies
The Largest, Safest and Deepest Harbour in the Caribbean Sea

THE WEST INDIAN COMPANY, LTD.

About 3200 feet quay berth. Depth of water 31 feet. Large stocks of BEST AMERICAN STEAM COAL and FUEL OIL for steamers and motorships.

STEAMERS bunkered day and night by large ELECTRIC COAL CONVEYORS, coal weighed automatically by officially ad-justed weighing machines, each conveyor delivering from 100 to 150 tons per hour.

FUEL OIL supplied day and night at the rate of up to 300 tons an hour.

FRESH WATER supplied at moderate cost from New Water Works with Filtering Plant.

NO PORT CHARGES

TRAN-SHIPMENT of cargo at very moderate rates to all points in the West Indies, Venezuela and Colombia by new, regular, intercolonial lines of STEAMERS and MOTORSHIPS.

For further particulars apply to:

THE WEST INDIAN CO., LTD. St. Thomas, V. I., U.S.A.
Telegraphic Address: OCCIDENT

FOR COAL:

THE BERWIND WHITE COAL MINING CO. 1 Broadway, N. Y.
Telegraphic Address: BERWIND

HULL, BLYTH & CO., LTD. 1 Lloyds Avenue, London, E. C.
Telegraphic Address: VAPOR

FOR FREIGHT, COAL AND OIL:

THE EAST ASIATIC CO., LTD. Copenhagen
Telegraphic Address: OCCIDENT

UNITED BALTIC CORP., LTD. 158, Fenchurch St., London, E.C.
Telegraphic Address: ORIENTEAKO

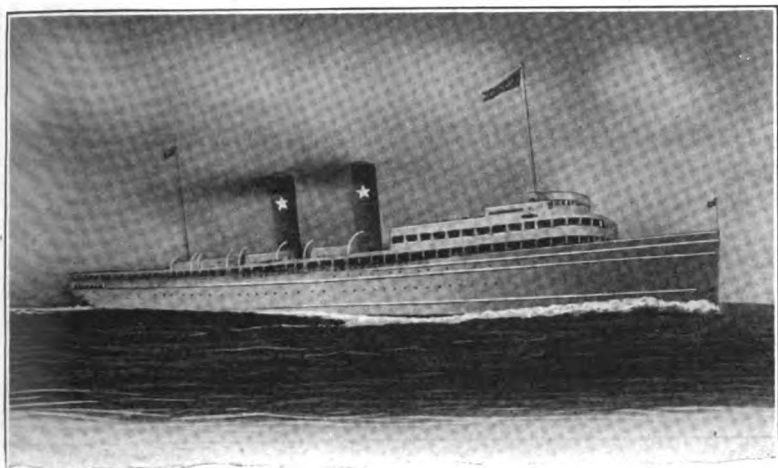
THE EAST ASIATIC CO., INC. 60 Wall Street, New York
Telegraphic Address: ORIENTICO

THE EAST ASIATIC CO., LTD. 310 Sansome St., San Francisco
Telegraphic Address: JELSTRUP

PROPELLERS

SOLID & SECTIONAL

BRONZE & SEMI-STEEL

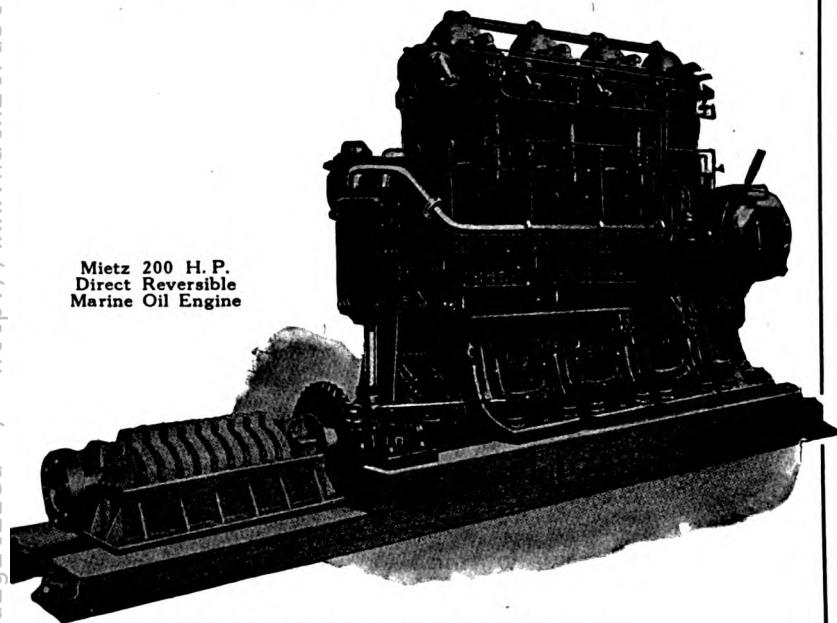


S. S. "Northwest" and sister ship, "Northland." Both of these ships carry Trout Semi-Steel, Built-up Propellers (right and left), 13 ft. 6 in. diameter. These wheels were installed in 1903 and increased the speed of the ship approximately one knot per hour over the previous speed obtained with the original propellers.



America's Pioneer Marine Oil Engine
FOR THE PROPULSION OF SHIPS

THE MIETZ



Mietz 200 H.P.
Direct Reversible
Marine Oil Engine

BUILT IN SIZES FROM 4 H.P. TO 350 H.P.

8,200 Engines Aggregating 300,000 B. H. P. in Service
Economical Operation On Low-Priced Fuel-Oils

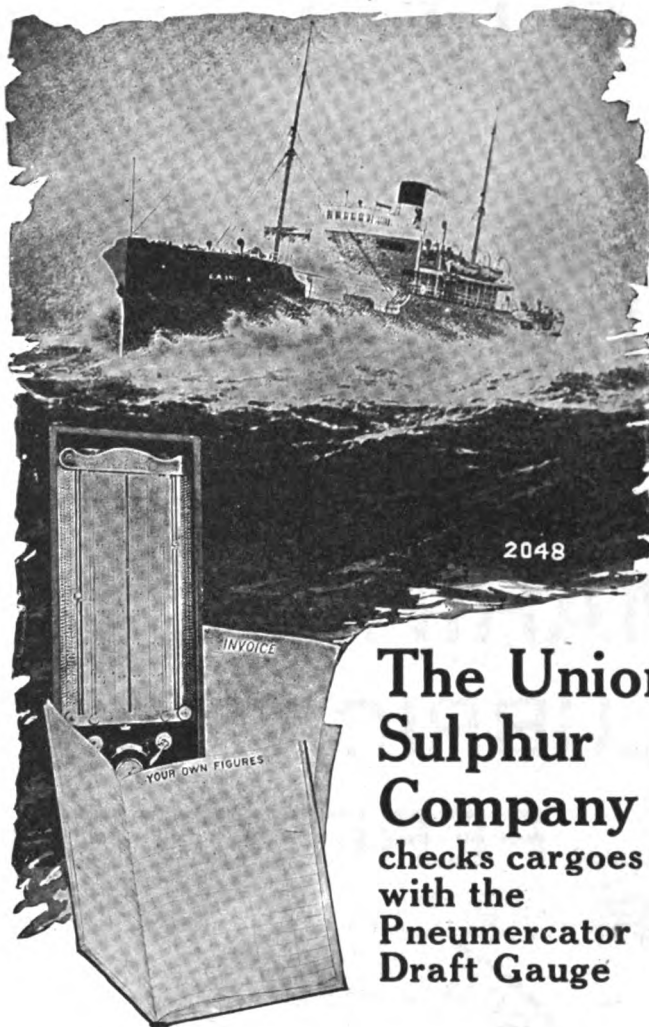
We also build Stationary Oil Engines.

4 H. P. to 350 H. P.

AUGUST MIETZ CORPORATION

434 East 19th Street

New York, N. Y., U. S. A.



The Union Sulphur Company
checks cargoes
with the
Pneumercator
Draft Gauge

In their own words:**—"we feel that the amount expended in fitting the Pneumercators is amply justified by the resulting advantages."

J. R. Gordon
Traffic Manager

In addition to *weighing bulk cargoes* the Pneumercator Draft Gauge measures accurately fore, aft and mean drafts; makes trimming ship easy; and detects leaks which could not otherwise become known until dangerous.

Do you know the possibilities of the Pneumercator System? Ask for the literature.

Pneumercator Company, Inc.
15 Park Row New York

Pneumercator

TRADE MARK
REG. U.S. PAT. OFF.

P-63

SHIPS TELEGRAPHS

The first Mechanical Engine Telegraph was built by "CORY" in 1866, and we have been building them ever since.

We also build Electrical Telegraphs, both Navy and Merchant Marine Standards.

If you need Engine, Steering, Docking, Fireroom, or in fact any type Ships Telegraph, why not take advantage of our experience?

We also Manufacture and Install Complete Marine Electrical Equipments.

CHAS. CORY

NEW YORK
183-187 Varick Street
Main Office & Factory

PHILADELPHIA
207 Market Street

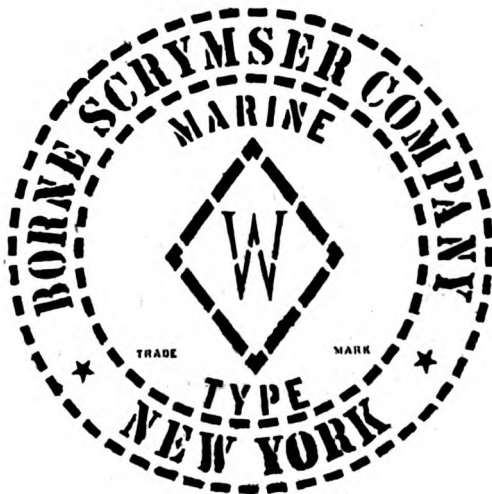


& SON, INC.

SEATTLE
515 Hoge Building

SAN FRANCISCO
11 Mission Street

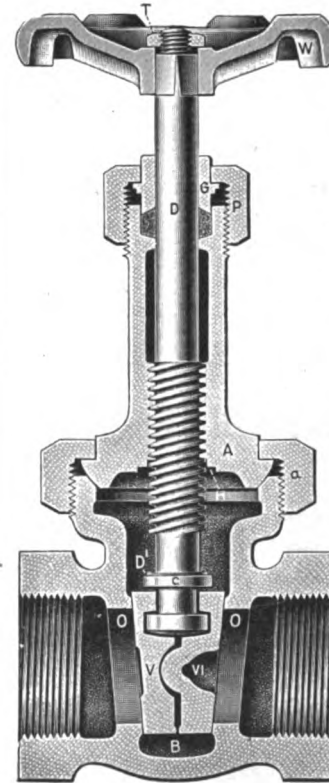
MARINE LUBRICATION PERFECTED



FOR
CYLINDERS AND BEARINGS

Powell Valves

White Star Gate Valves



DOUBLE WEDGE DISCS
and seat rings of
**WHITE POWELLUM
BRONZE**

with patented union bonnet, projecting packing gland; rising or non-rising spindles; screwed or flanged ends. For steam, water, gas, oil, air or chemicals.

**TO MEET EVERY
REQUIREMENT**

**Ask your dealer for
POWELL
"WHITE STAR"
GATE VALVES**

**THE WM. POWELL CO.
CINCINNATI, O.**

"White Star"
Gate Valve
Booklet
on Request



SHIPMATE RANGES

Smallest Size
Body 18¾ inches long

Largest Size
No limit to length

"As flat as a jib down-haul!" was supposed to be the maximum of proneness on a wind-jammer. But there was no flatness, down-hauled brows or jibbing at a meal cooked on a SHIPMATE.

MADE BY

THE STAMFORD FOUNDRY COMPANY

ESTABLISHED 1830

STAMFORD, CONN.

Pacific Coast Agencies
Holbrook, Merrill & Stetson, Sixth, Bluxome & Townsend Sts., San Francisco, Cal.
Oregon Marine & Fisheries Supply Company, 105-107 First St., Portland, Oregon.
Pacific Net & Twine Company, 1213-1223 Western Ave., Seattle, Wash.
Lipeett, Cunningham & Company, Ltd., Prince Rupert, B. C.
Canadian Fairbanks-Morse Company, 798 Beatty St., Vancouver, B. C.

DIESEL ENGINES REPAIRED

OUR facilities include large Machine and Forge Shops, Foundries, Docks and all other necessary equipment to rush repairs on Diesel Engines.

A complete plant with an efficient force.

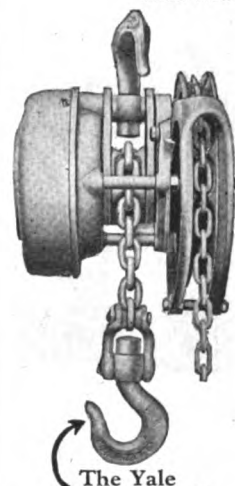
*Americas
Leading Marine Diesel Engine
Builders*

The New London Ship & Engine Co.
Plant located on New London Harbor
GROTON, CONN., U. S. A.



YALE

Yale Made is Yale Marked



The Yale
Safety Hook

The Safety Hook

EVERY Yale Chain Block has a Yale Safety Hook, so made that it gives visible warning if seriously overloaded.

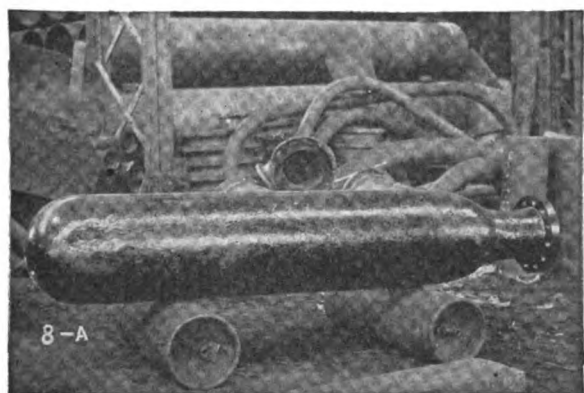
The special metal used in drop-forging these hooks prevents their breaking. Instead, if an unsafe load is lifted, the Yale Safety Hook shows the operator by slowly opening.

This unusual feature is but one of the many which make Yale Blocks so well known for safety and economy.

The Yale & Towne Mfg. Co.
Makers of the Yale Locks
Stamford Conn.

SPUR-GEARED BLOCK

For Starting Diesel Engines



AIR BOTTLES and TANKS in any size, made by forge and hammer welding, to meet Lloyd's Specifications.

Uniform wall thickness throughout guaranteed.

THE M. W. KELLOGG CO.

Factory
Jersey City
New Jersey

Offices
140 Cedar St.
New York, N. Y.

Phone:—Main 7754

Night Call:—Shore Road 172

**Jensen Oil Engine and
Machine Company, Inc.**

44-46 Dean Street,

Brooklyn, N. Y.

Motorships Repaired

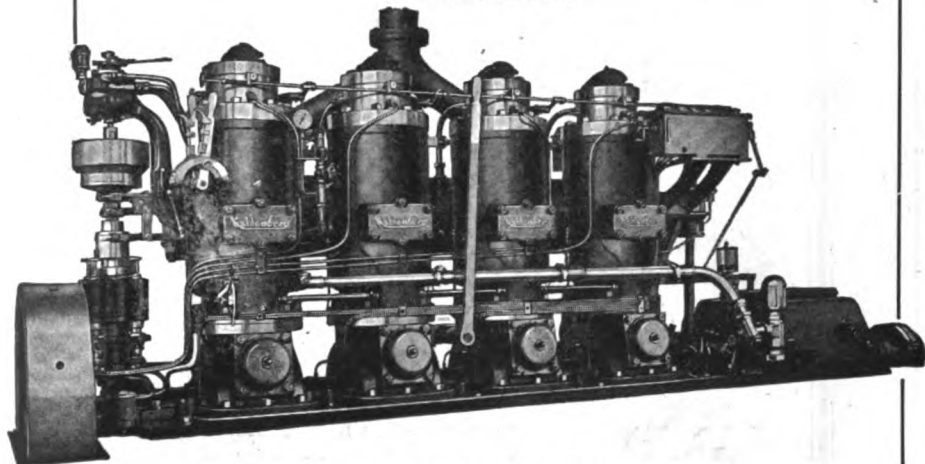
Installation of Diesel and
Semi-Diesel Type
Oil Engines

Installing and Repairing
of Electric Winches
and Wireless

formerly with
BURMIESTER & WAIN, Copenhagen

Kahlenberg

MARINE OIL ENGINES
(HEAVY DUTY)



AIR REVERSING TYPE

Positive Governor Control from No Load to Full Load.
Variable speed instantly obtainable from just "turning over" to wide open.
Operates on any of the crude fuel oils or kerosene.
Absolutely reliable. Fuel consumption .55 lbs. per H. P. hour.

Sizes 50 H. P. Upwards

KAHLENBERG standard engines in medium and heavy duty types are made in sizes from 2 to 54 H. P. and we would strongly recommend them for operating on KEROSENE, SOLAR OIL and GAS OIL. You ought to know more of the exclusive advantages the KAHLENBERG offers you.

Write for our literature stating your requirements fully.

KAHLENBERG BROS. CO.
MANUFACTURERS

1707 12th St.

Two Rivers, Wis., U. S. A.

SHIPBUILDERS

FOR

IRON BARK
GUM
HEAVY OAK
LIGNUM VITAE

CONSULT THE

**EHRlich-HARRISON
COMPANY**

HARDWOOD SPECIALTIES

35 HANFORD ST.
SEATTLE, WASH.

One Way Only -- The Best Way -- BUY!

WIRELESS

For Ship and Land Stations

WE SELL OUR SETS
YOU SAVE ON SERVICE

INVESTIGATE!

CUTTING & WASHINGTON

RADIO CORPORATION

6 & 8 WEST 48th STREET, NEW YORK, N. Y.

BINDERS

Special Reduction

We have a limited supply of heavy cloth-covered and adjustable Binders made especially to fit

MOTORSHIP

To encourage readers to save and protect their copies of "MOTORSHIP" we are offering these Binders at a specially reduced price of **\$1.00** each for a limited time only. Postage 15 cents extra

MOTORSHIP

1270 Broadway

New York City

U. S. A.

All Kinds of MACHINERY For Building SHIPS

Seattle

Washington

PERINE MACHINERY COMPANY

ADVERTISING COPY—IMPORTANT NOTICE

All Advertising "Copy" must reach the offices of MOTORSHIP not later than the 5th preceding the month of issue, otherwise the previous "Copy" will be used. This is necessary in order to publish on time. The cooperation of Advertisers will be appreciated.

The Manager.

RANSOME COMPASSES AND BINNACLES

*For Full - Powered and Auxiliary - Powered
Motorships*

Also for

Steamships, Yachts, Cruisers, Steam and Gas Launches, Workboats
of All Kinds and Lifeboats

Request a Sample of Your Nautical Optician, or for Smaller Sizes
Ask Your Jobber

I. C. RANSOME

2815 Jackson Street

Seattle, Wash.

Now is the Time for CAULKING, not talking

STRATFORD SPECIAL No. 1 OAKUM

Saves Money for Builders and Owners

George Stratford Oakum Co.
JERSEY CITY, N. J.

PROPELLER DESIGNS DYSON METHOD

Our force of Propeller Designers has worked in close touch with Admiral Dyson for many years and has had all the advantages to be obtained by this close association, both as to instruction and experience.

*Write for booklet
"Efficiency in the Screw Propeller"*

THACHER PROPELLER & FOUNDRY CORP.
ALBANY, N. Y.

SUCCESSORS TO AMERICAN SCREW PROPELLER CO. OF PHIL., PA

Rederiaktiebolaget Transatlantic (Transatlantic S. S. Co., Ltd.) Gothenburg

Telegraphic address: NIKE

Maintains a regular service

from SWEDEN NORWAY DENMARK
to UNITED STATES OF AMERICA
" SOUTH AFRICA
" AUSTRALIA (via Durban)
" AUSTRALIA (via Suez)
" SUNDA ISLANDS
" PERSIAN GULF
" WEST AFRICA

and vice versa.

General Agents for the United States:

Messrs. Furness, Withy & Co.,

Furness House, Whitehall Street

NEW YORK

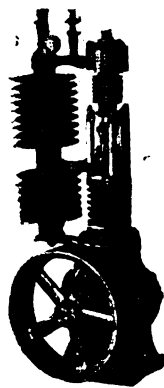
The SCANDINAVIAN SHIPPING GAZETTE

PUBLISHED BY

The Nautical Publishing Co., Ltd., Copenhagen

The only Scandinavian Newspaper dealing with
Shipping and Commerce printed in English

Assisted by a large Permanent Staff of Expert
Contributors in Shipping and Mercantile
Matters.

*World-wide Circulation***ADVERTISE!****SUBSCRIBE!**

RIX Pneumatic Auxiliaries for Diesel Motors

Designed and Manufactured by

RIX
COMPRESSED AIR & DRILL CO.
INC.

Catalog No. 150
on requestSAN FRANCISCO
505 Howard StreetLOS ANGELES
409 East 3rd Street
NEW YORK, 81 Broad Street

Unique Offer of New Surface-Ignition Oil-Engines at One-Third Market Price

TEN (5 RIGHT HAND, 5 LEFT HAND) TWO-CYLINDER, 80 B.H.P. BOLINDER-TYPE DIRECT-REVERSING MARINE ENGINES, constructed by Ruston Proctor for the British Admiralty, from whom we have purchased them as surplus War stock. Cylinder diameter 330 m/m, Stroke 340 m/m, 325 R.P.M. Complete with ordinary accessories and spare parts as supplied by the makers; No stern-gear included. May be inspected at any time by appointment with us in the North of England. PRICE £850 Net Cash each set, packed F.O.B. Liverpool. Guaranteed new and in perfect condition.

Apply HICK DIESEL OIL ENGINES, LTD.
70 QUEEN STREET, LONDON, E.C.4

Cable address "Hickiesel London."

ESTABLISHED 1882

SHIP CHANDLERS - - SAIL MAKERS

THE PIONEER HOUSE

The Best
Assorted Stock
on
This Coast

SUNDE & d'EVERS Co.

COLMAN DOCK

SEATTLE, WASH.

Our New Catalog
Illustrating
Same
Sent on Request

HOWARD W. WILLIAMS

Maker of Fine Photo Engravings

*

1400 Broadway 116 West 39th St.
Tel. Fitz Roy 5984 New York City

GOOD BOOKS ON MARINE HEAVY OIL ENGINES

MARINE DIESEL ENGINES

By John Lamb..... Price \$3.00
Postage 7 cents extra

DIESEL ENGINE DESIGN

By H. F. P. Purday..... Price \$7.50
Postage 15 cents extra

STATIONARY AND MARINE DIESEL ENGINES

By A. H. Goldingham..... Price \$3.00
Postage 10 cents extra

MARINE OIL ENGINES

By W. D. Martin..... Price \$2.50
Postage free

HOT-BULB OIL ENGINES

By Walter Pollock..... Price \$10.00
Postage 25 cents extra

LAND AND MARINE DIESEL ENGINES

By A. P. Chalkley..... Price \$5.00
Postage 25 cents extra

LAND AND MARINE DIESEL ENGINES

By Ing. Supino..... Price \$5.00
Postage 7 cents extra

Copies carried in stock

1270 BROADWAY **MOTORSHIP** NEW YORK CITY, U. S. A

Steamers Motorships Schooners

Plans and specifications prepared for Steel and
Wooden Vessels of all types and sizes.

Cox & Stevens

Naval Architects Marine Engineers

15 William Street, New York
Telephone 1375 Broad

A large number of vessels ranging from 4,000
to 400 tons deadweight from our designs and
specifications are today in successful operation
many others under construction.

MAX KUNER CO.

NAUTICAL OPTICIANS

Nautical Instrument Manufacturers

Estimates Furnished on Complete Outfits for Every
Type of Vessel

Improved Motorship Engineer's
Log Book. Designed by H. W.
Sumner Co. 180 pages; three
months' work. Price \$3.50.

MAX KUNER CO.

SEATTLE

WASHINGTON

Telephone Main 3305

Classified Advertisements

50 CENTS PER LINE, 5 LINE MINIMUM, PAYABLE IN ADVANCE

A Marine Engineer with several years' experience, now in the employ of one of America's successful motorships as 1st Asst., wishes to connect with Firm who is now building new motorship as Chief-Engineer. Best of reference, age 35 years. Address Box 377, care Motorship, Wilson Bldg., N. Y.

FOR SALE—New or second-hand Diesel Engine, Generating, and Marine Sets, from 140 up to 850 B.H.P., for immediate delivery; also accumulators for same. Apply Batchelor, Hailing Kent, England.

ADVERTISE IN AND READ "FISHING GAZETTE" 1270 Broadway
The Official Organ and Recognized Authority of the Commercial Fisheries of America New York City

PHONE--BROAD 5072

RICHARD D. KARR

NAVAL ARCHITECT MARINE ENGINEER
DESIGNS - SPECIFICATIONS - ESTIMATES - SURVEYS

81 BROAD STREET

NEW YORK, N. Y.

PAGE & JONES

Ship Brokers and Steamship Agents

Cable Address: "PAJONES," MOBILE
MOBILE, ALABAMA, U. S. A.

All Leading Codes Used

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912.

Of "Motorship," published monthly at New York, N. Y., for October 1, 1920.

STATE OF NEW YORK } ss.
COUNTY OF NEW YORK }

Before me, a Notary in and for the State and county aforesaid, personally appeared Russell Palmer, who, having been duly sworn according to law, deposes and says that he is the Business Manager of Miller Freeman & Company, Publishers of "Motorship," and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the Publisher, Editor, Managing Editor, and Business Manager are:

Publisher, Miller Freeman & Co., 1270 Broadway, New York, N. Y.; Editor, T. Orchard Lisle, 1270 Broadway, New York, N. Y.; Managing Editor, T. Orchard Lisle, 1270 Broadway, New York, N. Y.; Business Manager, Russell Palmer, 1270 Broadway, New York, N. Y.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock.)

Miller Freeman & Company, 71 Columbia St., Seattle, Wash.; Miller Freeman, 71 Columbia St., Seattle, Wash.; T. Orchard Lisle, 1270 Broadway, New York, N. Y.; Russell Palmer, 1270 Broadway, New York, N. Y.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and that affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is.....

(This information is required from daily publications only.)

RUSSELL PALMER, Business Manager.

Sworn to and subscribed before me this 5th day of October, 1920.

(Seal) A. J. RUELBORG, Notary Public.

Form 3526.—Ed. 1916. (My commission expires March 30, 1920.)

NOTE.—This statement must be made in duplicate and both copies delivered by the publisher to the postmaster, who shall send one copy to the Third Assistant Postmaster General (Division of Classification), Washington, D. C., and retain the other in the files of the post office. The publisher must publish a copy of this statement in the second issue printed next after its filing.

DIRECTORY OF SHIP AND ENGINE REPAIRERS OF THE WORLD

BURMEISTER & WAIN, LTD.,

ENGINEERS AND SHIPBUILDERS, COPENHAGEN, DENMARK

4 Cycle Marine Diesel Engines

LARGEST AND QUICKEST REPAIR ESTABLISHMENT IN
SCANDINAVIA

FOR MOTOR-SHIPS, TURBINE-SHIPS AND STEAM-SHIPS

FLOATING DOCK

11500 TONS CAPACITY

DRY DOCK

475 FT. LONG

100 TONS STATIONARY HAMMERHEAD CRANE

CAMMELL LAIRD & CO., LTD.

BIRKENHEAD, ENGLAND

REPAIRERS OF SHIPS, ENGINES AND BOILERS

SEVEN GRAVING DOCKS UP TO 860 FT. IN LENGTH
ALL ENTERED DIRECT FROM THE RIVER MERSEY

VICKERS LTD.

SHIPBUILDERS, ENGINEERS AND REPAIRERS
NAVAL CONSTRUCTION WORKS
AND DRY DOCKS

BARROW IN FURNESS, ENGLAND

HEAD OFFICE

VICKERS HOUSE, BROADWAY, LONDON, S. W. I.

AMERICAN OFFICE

2550 WOOLWORTH BUILDING, BROADWAY, NEW YORK CITY

NEW LONDON SHIP AND ENGINE COMPANY

GROTON, CONN.

REPAIRS AND FACILITIES INCLUDE LARGE MACHINE-
SHOPS, FORGE-SHOPS, FOUNDRIES, DOCKS, AND ALL
OTHER NECESSARY EQUIPMENT TO RUSH REPAIRS

PLANT LOCATED ON NEW LONDON HARBOR

DIESEL ENGINES REPAIRED

HARLAND & WOLFF LTD.

SHIPBUILDERS AND ENGINEERS

DIESEL ENGINE WORKS; FINNIESTON & SCOTSTOUN, GLASGOW
REPAIR WORKS; LIVERPOOL & SOUTHAMPTON

SHIPBUILDING & ENGINEERING WORKS

BELFAST - GLASGOW - GREENOCK

London Office, I. A., Cockspur St., S. W.

UNION CONSTRUCTION COMPANY

ENGINEERS AND SHIPBUILDERS

COMPLETE EQUIPMENT FOR BUILDING VESSELS OF ALL
TYPES UP TO 15,000 TONS DEADWEIGHT CAPACITYDESIGNERS AND BUILDERS OF PLACER DREDGES FOR MINING
GOLD AND TINMAIN OFFICE:
604 MISSION STREET
SAN FRANCISCO, CAL.SHIPYARD:
FOOT OF 14th STREET
OAKLAND, CALIF.

SABANG BAY HARBOUR & COAL CO., Ltd. SHIP AND ENGINE REPAIRERS

ELECTRIC OR OXY-ACETYLENE WELDING & CUTTING
FLOATING DOCK OF 3000 TONS DISPLACEMENT
30 TON FLOATING CRANE, &c.

APPLY TO THE SABANG COY AT

SABANG PULO WAY NORTH SUMATRA

OR TO THEIR OFFICES AT AMSTERDAM OR AT BATAVIA

Agents, HULL, BLYTH & CO., Ltd., 1, Lloyd's Avenue, London, E.C.

and
THE PENNSYLVANIA COAL & COKE CORPORATION, NEW YORK

DIESEL AND ELECTRIC DIESEL INSTALLATIONS

REPAIRS MADE TO ALL TYPES OF DIESEL
AND INTERNAL COMBUSTION ENGINES

SHIPYARD AND DRY-DOCKS



VULCAN IRON WORKS, INC.

JERSEY CITY, N. J.

TAMS LEMOINE & CRANE

52 PINE STREET : NEW YORK CITY

NAVAL ARCHITECTS AND ENGINEERS

SUPERVISION OF REPAIRS AND ALTERATIONS

TO HULLS AND MACHINERY DESIGN OF NEW VESSELS

BOTH STEEL AND WOOD AND ENGINEERING
SUPERVISION DURING CONSTRUCTION

W. & A. FLETCHER CO.

MARINE ENGINEERS AND SHIP REPAIRERS

CONTRACTORS FOR COMPLETE VESSELS

REBUILDING AND REFITTING

NEW STEEL AND WOOD DRY DOCK NOW IN OPERATION
LENGTH ON KEEL BLOCKS 440 FT., 0 IN.
LIFTING CAPACITY, 8,500 TONS

12 TO 14TH STREET, HOBOKEN, N. J., U. S. A.



There is a Texaco Lubricant for every purpose Aboard Ship

WE RECOMMEND the following Texaco Marine Oils for the lubrica- tion of Ships Equipped with Reciprocating Engines, Turbines and Diesel Motors.

Texaco Marine Engine Oil

A compounded oil made to saponify with water, for lubrication of reciprocating engines and auxiliaries where oiling is done by hand or through wick feed or drop oilers; also thrust bearings.

Texaco Marine Cylinder Oil

A heavy mineral steam cylinder oil possessing fine lubricating qualities, for use on piston and valve rods.

Texaco Marine Turbine Oil M

Texaco Marine Turbine Oil H

Texaco Turbine Oils Medium and Heavy are especially manufactured for the lubrication of Marine turbines with reduction gears. Both oils pass the emulsion test of the U. S. Navy and also have an excellent cold test and work very satisfactorily in gravity as well as force feed systems.

Texaco Ursa Oil

A heavy bodied oil, especially manufactured and recommended for lubrication of cylinders, bearings, and air compressors of Diesel and Semi-Diesel Engines.

Texaco Marine Dynamo Oil

A medium bodied oil recommended for lubrication of small turbines and small enclosed engines of the crank case type.

Texaco Refrigerating Oil C

TEXACO REFRIGERATING OIL C is a medium bodied oil with a very low cold test and is recommended for compressor and expander cylinders of ammonia machines.

Texaco Refrigerating Oil A

TEXACO REFRIGERATING OIL A is a light oil with very low cold test and is recommended for CO₂ Ice Machines.

Texaco Tunnel Bearing Grease

This grease is recommended for stern tube lubrication where a grease is used.

Texaco Greases No. 3 and No. 5

These are very high grade general lubricating greases. No. 3 is a medium bodied grease. No. 5 is a very hard grease.

Texaco Crater Compound

For gears, derrick winches, etc. This is a heavy adhesive lubricant which remains on the gear teeth and resists pressure and provides continuous lubrication. This product stands up under the most severe service.

The Texas Company

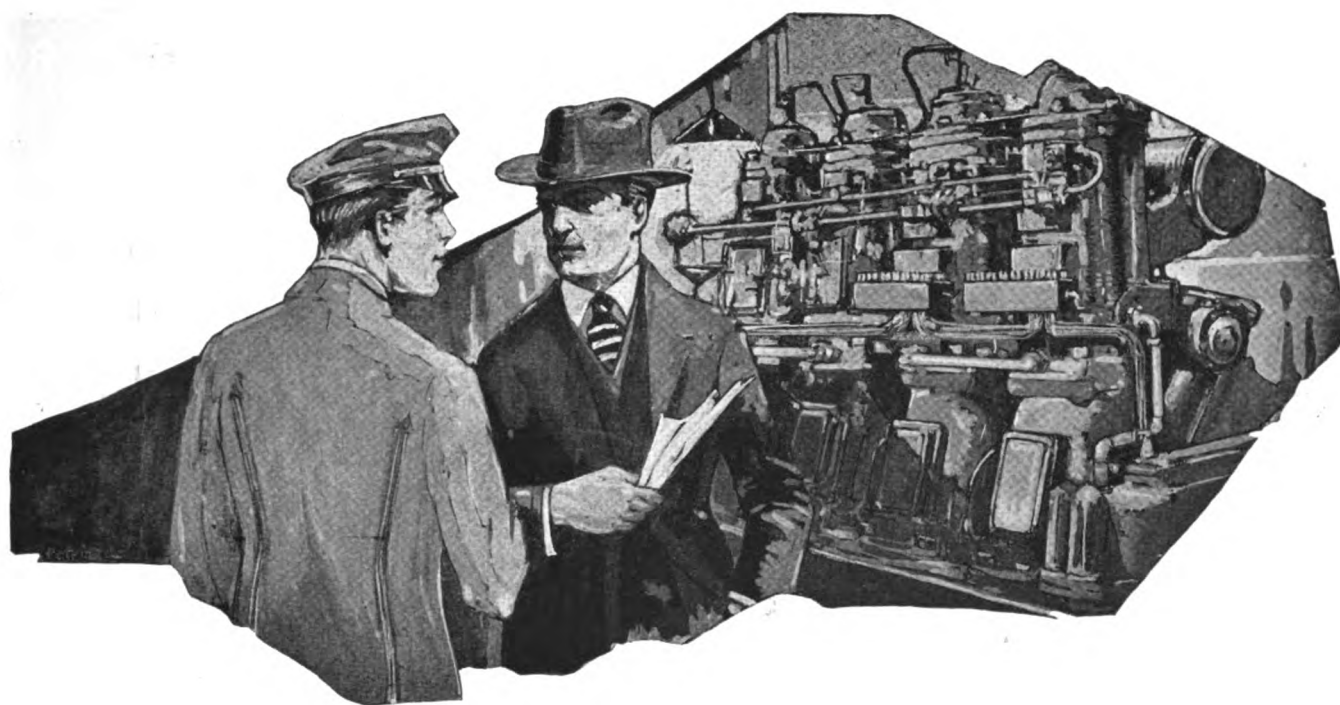
HOUSTON

CHICAGO

NEW YORK

Offices in Principal Cities

Supply points at all important Atlantic and
Gulf Ports as well as in the Canal Zone



Experts – they know Standard Oil Company Quality-Service

MEN who carry the responsibility of a ship's operation and safety must **know**. They cannot guess at the merits of their petroleum supplies.

That is why a large part of the marine trade of the Pacific Coast relies on Standard Oil Company—quality and service.

We have petroleum products of quality for each and every marine need,—fuel oils, lubricating oils, illuminating oils, storm oils, signal oils, preservative paints, etc.

Our numerous water front service stations are so located on the Pacific Coast as to be able to serve boats wherever they gather—whether they be sail, steam, carburation or injection type. Our large fleet of tankers, tugs and barges also serves the marine trade.

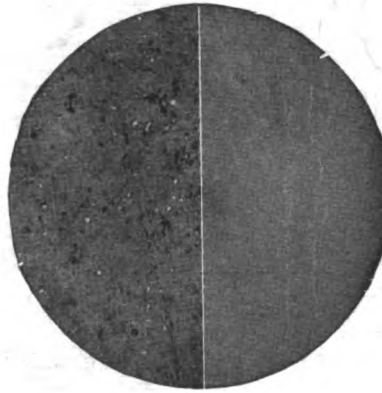
Let our representatives tell you about our marine products, their quality and our service.

STANDARD OIL COMPANY
(CALIFORNIA)



INCREASING MAXIMUM HORSE-POWER

Used oil as seen through the microscope. Note the grit and punctures in the film.



Fresh oil as seen through the microscope. Note the smooth unpunctured film.



There is a very definite relation between a motor's lubricating system and the maximum power it develops under load.

On a four-cylinder motor, fresh oil lubrication can increase the maximum operating load by more than one-sixth.

Comparative tests that established this fact during the last year were made with a typical, standard, four-cylinder motor.

First it was equipped with a regulation crank-case system that used its oil over and over.

With this system 27.25 horse-power was the maximum operating load.

Then the motor was equipped with a Madison-Kipp fresh oil system.

Its maximum operating load increased to thirty-two horse-power—or more than one-sixth.

While effecting this increase in power, the fresh oil system reduced the amount of fuel required for each horse-power hour by $13\frac{1}{2}\%$ —more than one-eighth.

And oil costs were reduced 83%.

These and many other tests are available for inspection to any one interested.

Similar results have for years been demonstrated in service on high-powered marine motors of many descriptions.

MADISON-KIPP CORPORATION
MADISON, WISCONSIN

Madison-Kipp Lubricators

